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JOURNAL OF EDUCATIONAL RESEARCH

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JOURNAL *of* EDUCATIONAL RESEARCH

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A SURVEY OF COURSES OF STUDY PUBLISHED IN THE LAST TWO YEARS

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FOR the purpose of analyzing the most recent output of curriculum bulletins, the author spent a considerable part of his last summer vacation in the friendly atmosphere of the Curriculum Bureau of Teachers College which houses the largest collection of courses of study in the country. This study is the third in a series of surveys reported in this journal at intervals of two years. If any progress has been made in the last two years this study should reveal it, as far as it is reflected in the published bulletins of school systems. The data were recorded on a work sheet, the following copy of which is a slight revision of the actual one used, although a large amount of information was recorded in the form of informal notes and marginal comments.

Over 300 courses of study from about 125 school organizations were analyzed. Of these nearly 270 were examined thoroughly. The remainder consisted of general courses of study, embracing all subjects, the treatment of which is usually brief and not sufficiently informative to be useful for our purposes. Geographically, the courses of study which were surveyed came from all states of the Union. They were distributed as follows: New England, 21; Middle Atlantic, 53; East North Central, 41; West North Central, 34; South Atlantic, 22; East South Central, 2; West South Central 33; Mountain, 9; Pacific, 47; and Philippine Islands, 5. In comparison with data recorded two years ago, the regions which show a considerable increase in output are: the Middle Atlantic, West South Central, and Pacific States.

WORK SHEET FOR SURVEY OF COURSES OF STUDY

Place..... Subject..... Grade.... Date..... Critic.....

Note: Underline the answer, or fill in the blank space.

1. Were consultants engaged in the making of the course of study? a) none, b) general consultant, c) subject specialist, d) both.

2. Who was at the head of the general or central committee? a) director of curriculum, b) superintendent, c) assistant superintendent, d) supervisor, e) principal, f) teacher, g) none.
3. Who was at the head of the subject or production committee? a) director of curriculum, b) superintendent, c) assistant superintendent, d) supervisor, e) principal, f) teacher, g) none.
4. Which of the following does the introductory statement include? a) basic views on education, b) basic views on the subject, c) general objectives of the subject, d) nature of unit of work, e) discussion of tests, f) learning equipment and supplies, g) general suggestions to the teacher, h) time allotment, i) ....., j) ....., k) .....
5. Does it include objectives? a) objectives (goals), b) outcomes (results), c) neither.
6. Are the unit objectives: a) specific, b) general.
7. Does it include procedures (tell how the activities are carried on)? Yes No
8. Is the course of study subdivided into parts called units of work? Yes No
9. Are the units large or small? Large (over two weeks), Small (less than two weeks).
10. What is the basis of the unit of work: a) complete experience, b) a center of child interest, c) theme, principle, d) concept or large undertaking, e) graded step or process.
11. To what degree are the activities life-like? a) much, b) moderate, c) little, d) none.
12. Is the course of study: a) completely integrated (all subjects disappear), b) partly integrated (several subjects fused), c) correlated (related subject-matter introduced).
13. What is the typographical form? a) parallel columns, b) organized paragraphs, c) organized outlines, d) informal account.
14. Is the course organized into a series of functional units (based on experiences or the uses of knowledge)? Yes No Partly
15. Does it include sample tests? Yes No
16. What provision is made for adapting instruction to individuals? a) None, b) instruction sheets, c) two or three separate procedures, d) level of difficulty, e) extra assignments, f) .....
17. Is there evidence of experimentation before adopting the course of study? Yes No
18. Is any research reported on: a) none, b) objectives, c) learning studies, d) grade placement, e) curriculum appraisal, f) time allotment, g) individualizing instruction.
19. Is the course of study: a) Printed, b) Mimeographed.
20. What is the quality of the typography? a) very good, b) good, c) average, d) poor, e) very poor.
21. How many pages does the course of study contain? .....

The survey includes courses of study from the open country, the small town, the small city, and the large city. The distribution of bulletins as to population is shown in Table I.

TABLE I

POPULATION OF COMMUNITIES REPRESENTED IN CURRICULUM SURVEY

Population	Number	Population	Number
Over 250,000	23	10,000 to 25,000	8
100,000 to 250,000	13	Under 10,000	2
50,000 to 100,000	14	State, County, and Territory	36
25,000 to 50,000	10		
		Total	106

COMPOSITION OF COURSES ANALYZED

A glance at Table II will show that all subjects are included in the present survey. A comparison with earlier data shows that the most marked increase in output of courses of study occurred in music for the secondary school grades. There was a considerable increase in social studies courses and a slight increase in language courses, the increase in both cases being limited to the secondary grades. The commercial subjects, foreign language, and health and physical education, in which subjects the output was accelerated two years ago, show a falling off in our present canvas. In home economics, industrial arts, mathematics, and science, the output has not varied much in the last two years. The

TABLE II

OUTPUT OF COURSES OF STUDY BY SUBJECTS (1932-1934)

	Total All Grades	Primary (K-3)	Intermediate (4-6)	Elementary (K-6)	Total Elementary	Junior High (7-9)	Senior High (10-12)	Jr. & Sr. High (7-12)	Total Secondary	Grades 1-12	Junior College (13-16)
Art	8	1	—	2	3	1	2	1	4	1	—
Commercial	18	—	—	—	—	5	13	—	18	—	—
Foreign Language	9	—	—	—	—	—	7	2	9	—	—
General	10	1	—	5	6	3	—	1	4	—	—
Health and Physical Education	10	1	—	7	8	2	—	—	2	—	—
Home Economics	8	—	1	1	2	3	1	2	6	—	—
Industrial Arts	8	—	—	—	—	4	4	—	8	—	—
Integrated*	2	1	—	1	2	—	—	—	—	—	—
Language	52	5	4	15	24	10	9	4	23	4	1
Mathematics	28	2	4	2	8	10	9	1	20	—	—
Music	27	—	1	11	12	1	8	4	13	2	—
Science	20	2	2	4	8	6	6	—	12	—	—
Social Studies	61	5	15	13	33	17	10	—	27	1	—
Special	2	—	—	1	1	—	—	—	—	1	—
Totals	263	18	27	62	107	62	69	15	146	9	1

*In addition, there were sixteen courses which might be classified as integrated courses, although they are listed in the table under their subject names.

integrated course of study, for the first time, appears in sufficient amount to be recognized as a noticeable tendency.

There was an unusually large output of special bulletins which can not be strictly classified as courses of study but which bear a relation to the curriculum. Study guides for curriculum revision were issued by several state departments including: Arkansas, Mississippi, North Carolina, Texas, and Virginia. The school systems of Pittsburgh and Los Angeles prepared special reading materials for pupils on current social and economic problems. Besides these, at least a half dozen publications appeared designed as reading materials for pupils in the fields of social studies, literature, science, and health. Three reading lists and two handbooks of correct usage were found. Other special bulletins include home room activities; procedures for curriculum revision; manuals for individual study; and health services.

ADMINISTRATIVE TENDENCIES

In the administration of the program of curriculum revision, one discovers the almost universal practice of committee procedure. The production committee, that is, the group which actually constructs the new course of study is always found. In addition, the survey revealed the fairly common occurrence of the general or central committee, particularly in the case of programs that are elaborate and involve several subjects and grades.

The teacher continues to play the most important role in curriculum revision. During the last biennium the superintendent appears to have taken a greatly decreased direct responsibility for curriculum revision, at least according to the records. In order of frequency, curriculum committees were headed by the following: teacher, supervisor, superintendent, professor, director of curriculum, assistant superintendent, and principal.

Heretofore principally a consultant, the professor in teacher training institutions, appears for the first time as a significant participating leader in practical curriculum making. Fifteen programs were headed by a professor. The Oklahoma State course of study was the result of a committee procedure under the direction of a professor at the state university. In the state of Missouri the program of revision was carried out in graduate courses at the University of Missouri under the direction of a professor. In Florida, as well as in several other southern states, the curriculum program was conducted under the direction of the Curriculum Laboratory at Peabody College.

The number of curriculum programs headed by the curriculum director in the last two years has declined. Due to enforced economies this administrative office has been discontinued in a number of school systems. The practice of retaining general and subject consultants has been continued at the usual rate, twenty-two of the former and twenty-one of the latter being reported.

THE INTRODUCTORY STATEMENT

The introductory statement of the course of study is most commonly devoted to the following topics, given in the order of their frequency: basic views on the subject; general suggestions to the teacher; general objectives of the subject; basic views on education; time allotment; learning equipment and supplies; nature of the unit of work; testing the results of instruction; the sequence of courses; and adapting instruction to individuals. In general, it may be said that the introductory statement is becoming more informative. There was a considerable increase in space devoted to such hitherto neglected sections as: basic views on education, nature of the unit of work, discussion of tests, and time allotment. It was observed that ten curriculum bulletins included an outline of a complete sequence of courses for three, six, or twelve grades. This is a desirable addition because it gives the reader an understanding of the relation of the work of one grade to the whole curriculum.

Evidence persists that the principles and policies in the introductory statement are not, in too many cases, borne out by the body of the course of study. School systems which are specially interested in improving the physical setting for learning, stress it in the introductory statement. For example, the California course of study in Social Studies devotes a special section to the classroom or laboratory giving a detailed description with specifications. The introductory statement of the course of study has shown improvement in those respects in which it was wanting in our last survey.

THE INCLUSION OF OBJECTIVES IN COURSES OF STUDY

An increasing number of courses of study include specific objectives. These are the meaningful goals of the learning units which give direction to the activities of the pupil. Usually, they are set up in advance and sometimes they are the self-determined purposes of the pupils.

There is evidence in only ten courses of study to show how these goals were determined. In the main, they reflect the results of a certain amount of the analysis of useful social purposes conducted in the last

fifteen years. The results of research on objectives in the various fields of life have been incorporated in the treatises on the several subjects and through them have found their way into courses of study. Most frequently, however, the goals have been selected from bulletins which in certain regions are commonly considered as superior. It is again proposed that it would be illuminating to the reader to know by what means or on what principles the objectives were selected.

In instances where objectives are clearly stated in terms of accomplishments in individual and social behavior, they represent a march toward the day when the school shall really become an institution for better living. To the extent that the school serves this end, it may be described as *functional* in character. It is extremely difficult to classify courses of study as functional, since the purposes expressed do not always reveal the nature of the learning process. It is not without misgivings, therefore, that we report that a little over forty percent of the courses studied could be put in the functional category. This, if actually true, represents real progress.

In some subjects the functional organization is inherent in the nature of the subject, that is, the subject parallels a life activity—home economics. In some subjects such as general science, the functional treatment while not inherent in the subject is taken for granted quite generally and the courses of study are generally organized in this way. The commercial courses are surprisingly functional in the sense that they are organized around the principal commercial activities, such as, the work of the *filing clerk*.

Some courses in language are becoming functional in the sense that study is the outgrowth of all subjects. The music courses show this trend only in those instances in which the organization is based on musical activities, types of songs, glee clubs, etc. In health and physical education a minority of courses are based on games, dances, and health habits. In foreign language there is some evidence of the use of social situations, such as *meals*, as the basis for units. In industrial arts all courses in which the pupils construct a useful article, the organization is functional. In the field of mathematics only the arithmetical portions and a little of applied geometry and algebra show this trend. The fused courses in the social studies make some effort to organize the subject around centers of interest, social institutions, and social movements. The general tendency discussed here will recur in the next section on the unit of work in a slightly different setting.

UNITS OF WORK

On the basis of a somewhat careful analysis we found that about 50 percent of the courses were subdivided into clearly recognizable units of work. The rest may be said to be subdivided into parts which are too fragmentary to suggest the completeness or unity of the parts. The subjects that exhibit this tendency to a marked degree are social studies, science, practical arts, health and physical education, and commercial studies; the subjects in which this tendency was exemplified to the smallest degree are mathematics, language, music, and foreign language. From the point of view of size of the unit the courses divide themselves equally into those which contain large units and those which contain small units, a small unit being one which lasts less than two weeks. This is not a matter of great consequence when large units are broken up into coherent subdivisions which the pupil senses.

Of the courses that are divided into a series of coherent units only 30 percent are based on a technical process or graded step which shows a marked trend away from the conventional organization of subjects in the last two years. On the other hand, the functional basis of the unit shows a marked increase. Of the unitary courses, the complete social experience is the basis in 31 percent of the courses; the theme or concept—in 25 percent; and the center of child interest—in 13 percent of the unitary courses. When all courses analyzed, unitary and nonunitary, are used as basis of comparison, we find that 40 percent have a functional basis, that is, they are based on social experiences, themes, concepts, and centers of interest. These courses represent a departure from conventional practice. This is one of the most significant trends revealed by the survey. Our data would lead us to believe that the number of courses of study that represent this tendency has doubled in the last two years.

This same conclusion was reached when the activities were examined to discover the degree to which they were life-like. About a third of the courses contained activities which might reasonably be regarded as life-like to a moderate or large degree. In 36 percent of the courses the activities were life-like to a small degree, and 31 percent contained no trace of social reality whatsoever. When this criterion was applied to each subject group it was found that health, physical education, and the practical arts were very life-like; that the commercial studies were fairly life-like; that language and the social studies were average; and that mathematics, foreign language, and science were socially real to a small degree.

As we perused one course of study after another, we had the conviction that very few teachers and course of study makers had probed deeply into the bases of the unit of work. Indeed, we discovered that our ideas were not perfectly clear. Consequently, the many specific bases of the unit of work were recorded and analyzed, yielding the reclassification of the bases of the unit of work given below. We would not give the impression that it is something to be standardized. It merely serves to clarify one's thinking. In the broadest sense, the unit of work appears to us to be a complete and coherent learning experience having a purpose which is meaningful to the pupil and which is closely related to a life situation; an aspect of the social or natural environment; or a center of child interest. It may also under favorable learning conditions be based upon a generalization or class of things, provided they are real and meaningful to the pupil. A unit based upon a technical principle or graded step is likely to be an unreal basis for a learning experience.

In our opinion, the tendency to organize courses around a number of major concepts, as for example in the Des Moines, Iowa, course in elementary science, may result in making them adult-minded and rather intellectualized. It should be pointed out that the introductory statement in this illustration explains that each unit of study grows out of child interests but the body of the courses of study does not bear out this statement. This confirms our belief that despite the best intentions, an abstract analysis of concepts or themes cannot be made to coincide with individual behavior and social experience.

The Virginia State course of study, among the most radical of the new programs, is based on centers of interest from grade 1 to 12. It is uncompromisingly functional in content. The material is very rich in suggestions involving considerable readjustment of habits and attitudes of teachers. In its foundations it is about as thorough as any program. There is a very conscious effort to be consistent in the incorporation of the basic centers of interest, the basic generalizations, procedures, and means of evaluation. We are, of course, here reporting only the huge academic labors of the participants in the construction of the document. Whether it will remain a contribution to knowledge or be converted into a contribution to practice only time will tell.

A Tentative Reclassification of the Bases of the Unit of Work

1. A complete life experience or situation
   a. A life-like enterprise—home care of the sick (health)—chorus (music)

b. A practical task—care of the kitchen (home economics)
c. A job—constructing a stool (industrial arts)—filing (commercial)
d. A game—golf (physical education)
e. Personal behavior—habits of eating (health)

2. An aspect of the social environment
   a. A phase of business—insurance (commercial)
   b. A geographic unit—Arabian Peninsula (geography)
   c. A social institution—The Home (social studies)
   d. A phase of economic life—Money and Credit (economics)
3. An aspect of the natural environment
   a. A phase of the natural environment—weather (science)
4. A center of child interest
   a. A child theme—boats (social studies)
5. A generalization or theme or concept
   a. Social organization—man and his world (literature)
   b. Social policy—utilization of natural resources (social studies)
   c. Historical—territorial expansion (history)
   d. Social environment—living together (social studies)
   e. Physical—the changing earth (science)
   f. Biological—evolution (science)
6. An important class of things
   a. In the plant world—fruit, trees (science)
   b. In the animal world—birds (science)
   c. In the business world—negotiable instruments (commercial)
   d. In music—songs (music)
   e. In the geographic environment—hot, dry lands (geography)
7. A technical principle; or phase of a conventional subject
   a. A scientific principle—gravity (science)
   b. An artistic principle—form (art)
   c. A phase of science—cells and tissues (science)
   d. A graded step or process—decimals (mathematics)

NOTE: The problem occurs as the basis but it is not included because it refers to the psychological form of the unit and is applicable to all the above classifications.

THE FORM OF THE UNIT OF WORK

As heretofore we have classified the courses of study according to form in order to discover any changes in common practice. For purposes of the tabulation we have distinguished four types: 1) outline under several headings; 2) solid paragraphs under several headings; 3) parallel columns under several headings; and 4) informal descriptions. The analysis shows an increase in organized outlines and the complete

disappearance of the informal account. The data for the last six years are shown in Table III. These changes are undoubtedly in response to demands from teachers, although our preference is for the solid paragraphs because they make for a full and complete treatment of the procedure.

We have not attempted to study the recurring topical headings of units but have observed that they are becoming unnecessarily more numerous and complex. Three out of every four courses of study include procedures, that is, they describe how activities are carried on. In this respect the modern course of study is a very great improvement over that of fifteen years ago. Many courses of study contain the raw materials for the construction of units and not the connected account of an actual learning unit as it was experienced on a given occasion by the pupils.

TABLE III

COMPARISON OF FORM OF UNITS 1930, 1932, AND 1934

	Percent of Total		
	1930	1932	1934
	242 Courses of Study	317 Courses of Study	287 Courses of Study
1. Organized Outline	47	48	57
2. Parallel Columns	27	16	17
3. Solid Paragraphs	19	26	25
4. Informal Description	7	10	

INTEGRATION

Eighteen courses were isolated, which, according to our understanding, may be classified as integrated courses. This is about twice as many as we reported in our last survey. The number of fully integrated courses of study is still small. This, however, does not reflect the extent of experimentation with courses that are completely integrated. Mr. Fred Ayer's recent unpublished data based on a questionnaire study show that "about two school systems out of every three in the United States have been definitely affected by the trend toward integration." In theory integration appears to mean that organization of learning activities which is based on the unity or wholeness in the individual and in social experience. Practically it means that school life consists of a series of units of learning that are meaningful to the learner and which fit into his social life. It means furthermore that nothing is introduced unless it is intrinsic to the socially real situation on which the unit is based.

This tendency toward integration has been observable in the last few years but not up to our present survey did it emerge as a significant movement. Curriculum workers have for some time been urging a reorganization of the curriculum on the basis of social experience. The project and the activity curriculum, emphasis on pupil, and analyses of social life are the backgrounds of the unit of work as discussed in a preceding section. Several years ago a new pattern was woven, supposedly, not out of these educational strands, but out of emerging theory in psychology, biology, and physics. It is our hope that the progress of this worthy movement will not be impeded by an intellectual controversy over meanings.

Here we are concerned only with the record. There is undoubtedly a movement which, at least on an experimental basis, has wide recognition and which on the whole will advance the school as an environment for child life. On the basis of the scattered integrated courses that we examined several recognize no subject boundaries and the rest are truly integrated although they are nominally listed under subject titles. The social studies more than any other group are the most common nuclei of integration. Some courses of study which make formal recognition of integration are: Houston, Texas; Virginia State Department; Arkansas State Department; Tulsa, Oklahoma; Wilmington, Delaware; Pasadena, California.

In discussing the unit of work we pointed out that a great number of courses are based upon a complete social experience, a theme, principle, topic, or concept. These courses for the most part recognize that pupils will function primarily as individuals in social settings that have meaning, purpose, and unity. These courses bear some resemblance to the so-called integrated courses. They differ, principally, in their recognition of the existing, formal and conventional subjects. To the degree that they free themselves from the restricted boundaries of the subject, and follow the unit wherever the inquiry leads, they approach the purposes of integration. For example, a study of a local governmental service, ostensibly in the field of social studies, involves graphic representation, map study, scientific principles, arithmetical computation, and so on.

MECHANICAL DETAILS

For the first time there were more mimeographed courses of study than printed ones, 53 percent being mimeographed and 47 percent printed. This is undoubtedly due to economic causes although it may

reflect a certain experimental tendency. Typographically the bulletins continue to improve. We judged 4 percent of the courses very good; 31 percent good; 36 percent average; 21 percent poor; and 8 percent very poor. Thirty-five percent of the publications were above average quality. The number of pages ranged from 5 to 1000, the median size being 85 pages. Seventy percent of the bulletins were less than 120 pages in length. Several courses of study were printed on standard letter size paper in two columns and appeared to make a readable book. There are still a number of school systems that issue bulletins in extra large mimeographed sheets. Since courses of study are being widely used in collections it would be an advantage in filing if all mimeographed materials were issued in the standard page of 8½ inches by 11 inches. Several school organizations have been issuing a series of separately bound units of work in mimeographed form. These are usually integrated or activity units. A few courses appeared in photoprint reduced from typewritten manuscript. Only one course of study contained an index.

OTHER TENDENCIES

Inclusion of Tests in the Course of Study.—Tests are discussed in a general way in the introductory statement of the course of study. In addition, a number of courses of study carry sample tests in the body of the bulletin. In the last two years the number of courses including tests declined from 18 to 11 percent. Diagnostic and remedial materials are included in several arithmetic and reading courses. The testing procedure for each unit is found in a few instances. The Virginia State course of study contains the most original attempt to evaluate the results of learning. There is no stress on exact measurements. For example, a political problem is presented and the pupil is asked to suggest a solution. This is a step in the right direction because an attempt is made to base the test on the objectives of the course and because the test items are designed to elicit life-like responses.

Provision for Individual Differences.—The practice of suggesting procedures for individualizing learning according to our survey showed a decline in the last two years. Only ten percent of the courses of study contained such suggestions as compared with 21 percent, formerly. The most common suggested technique was the instruction sheet followed by the extra assignment. Only two courses included separate procedures for two levels of difficulty. The provisions for individualizing learning reported here do not reflect the extent of practice in the public schools

because they are usually administrative and are not incorporated in course of study bulletins, and because the latter do not report the use of commercially printed work books which are very common.

Experimentation and Research.—An analysis of courses of study leads one to the conclusion that very little experimentation and research is reported in these publications. Eight percent of the bulletins showed evidence of experimentation and 4 percent reported research. The reported research was devoted almost exclusively to the selection of objectives, one bulletin containing evidence of research on the selection of a text. There is evidence that new units are being developed experimentally in laboratory schools. Since the curriculum bulletin is one means of contact with the teacher, it is a little surprising that something of the experimental attitude is not conveyed by the supervisory staff through this medium. On the whole, the amount of experimentation and research as reported in the courses of study has declined in the last two years, possibly, due to the curtailment of research and curriculum departments.

Participation in Community Affairs.—There are a few instances of suggestions for participation in community activities and for first-hand contacts with social realities. For example, the Ann Arbor Social Studies monograph contains suggestions for social action in connection with every unit in the course. After studying the financial crisis in education the writing of letters to newspapers and the arrangement of meetings is suggested.

TENDENCIES WITHIN SUBJECTS

Art.—In the art courses we observe a tendency to relate the work to the subject matter for the grade. The Oakland Junior High School Course of Study contains samples of the pupils' work. The Indiana State curriculum is developed around the social studies units but the treatment is quite brief. The Detroit elementary course is a fusion of fine art, industrial art, and social studies. The Baltimore, Maryland, Junior High School course contains a sequence for the three grades. New York City has a course in art weaving.

Commercial Studies.—By and large, the commercial courses are organized functionally, that is on the basis of job analysis but the development frequently fails to have a basis in common, actual commercial situations. Too many units are mere exercises.

Health and Physical Education.—The courses in health and physical education are based on games, athletic sports, and health habits. The

Houston, Texas, course contains suggestions for integration. The Kansas City, Missouri, elementary course in health is inseparable from other subjects and contains illustrative units showing how health is learned incidentally. The Ohio State secondary course combines health and physical education and is an elaborate treatise on the subject. Of the fourteen courses in this classification, seven treated health separately; three treated physical education separately; and four combined the two.

Language.—An analysis of the language courses reveals a tendency to make it an outgrowth of all subjects. This practice is exemplified in the Madison, Wisconsin, elementary course; the California State elementary course; and in Seattle, Washington, a course of twelve grades. In the Springfield, Massachusetts, course for Grade II, language is an outgrowth of social studies. In a number of courses, language is incidental to units of work or centers of interest. This is true of the following school systems: Des Moines, Iowa, III-VI; Raleigh, North Carolina, II; and Stanley County, North Carolina, III-VII. The New York State secondary course in literature recommends units based on centers of interest or themes. This is also true of the Pasadena, California, secondary literature course. The Minnesota State secondary course and the Muncie, Indiana, elementary course include library instruction. The Detroit, Michigan, elementary spelling course is self-instructional.

Mathematics.—While elementary and junior high school arithmetic is becoming more meaningful and useful, the secondary courses do not show very much progress, according to our survey. The latter are mere topical outlines with no attempt at originality of learning activities. The great problem in this field is to make algebra and geometry functional. Here and there are signs of ingenious applications, but unfortunately these do not affect experience significantly. The Los Angeles, California, high school pays its respects to functional mathematics in the introduction but only the arithmetical parts are acceptable from this point of view. New Jersey State algebra course makes an attempt to relate the subject to life.

Music.—Comparatively, the output of curriculum publications in music was plentiful but the quality, from the point of view of modern tendencies, is poor. The grade outlines are treated very briefly in topical outline, and usually contain a few general suggestions to teachers. The technical elements are taught as isolated exercises and there is very little evidence of complete units taught separately or related to other

subjects. The tendency to include music appreciation is good. The Wichita, Kansas, elementary bulletin classifies the songs under activities or units. Pittsburgh has a high school course in orchestra and piano.

Science.—Among the science courses one observes a tendency to organize a sequence of courses on the basis of concepts, as illustrated in the following: Des Moines, Iowa, Kg.-VI; Houston, Texas, VI; and Pasadena, California, VIII. An example of a concept is: "certain things are essential in the environment of all living things." A concept is a major fundamental truth in science. The unit of study according to this plan is a series of related experiences growing out of child interests and organized about essential science meanings. This strikes us as being difficult of realization. The Maryland State, I-VII, course contains systematic seven-grade sequence. The Milwaukee, Wisconsin, VIII, course is organized around groups of living things, such as, birds and trees. Biology, chemistry, and physics show no departure from the conventional topical outline of technical principles and processes.

Social Studies.—Unlike the situation two years ago, the social studies courses are distinctly fusion courses. Of a total of 61 courses, 10 were classified as geography, and 10 as history; the remainder were genuinely consolidated. On the basis, therefore, of our sampling of materials it is reasonable to report that the tendency to fuse the social studies, which two years ago was true in name only, is now becoming true in fact. For the first three grades, it may be said with certainty that fusion in social studies is the common practice. These courses are usually based on children's interests. Frequently the social interests form the core for an integrated curriculum. It is here that we may look for integration to make the most immediate headway.

A course in current social problems is being offered in the high schools of Chicago, Illinois; Fresno, California; and Los Angeles, California; the latter including controversial topics. The California State elementary course contains an introductory chapter on the theory of the social studies. The Fort Worth, Texas, elementary course is organized around six basic themes. The elementary course of Elmhurst, Illinois, and the grade IV course of Shorewood, Wisconsin, are individualized.

CONCLUSION

There is evidence of an increasing attention to the theoretical foundation of programs of curriculum revision. The importance of setting up meaningful goals to give direction to pupil activities is being increas-

ingly recognized. A larger proportion of courses appear to be socially useful or functional in character. To a greater degree units of work are being based on social experiences and life-like interest centers. Although the number of published integrated courses is still small, integration has emerged in the last two years as a significant curriculum trend. Typographically, the bulletins continue to improve and the same may be said for their literary form. Sections of the country which have hitherto lagged in curriculum revision are beginning to show a lively interest.

What of the future of curriculum making? The abundant output of courses of study; the general practice of offering courses in curriculum making; the common emphasis on the curriculum in programs of professional meetings; the recent emergence of interest in state-wide programs of curriculum revision; the uninterrupted flow of published treatises; the sustained interest in the curriculum revision movement; and the recently accelerated drive to revise the curriculum of the secondary schools—these are signs of promise of continued progress in the curriculum of the American School.

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(Signed) George A. Brown
Publisher of the *Journal of Educational Research* and President, PUBLIC SCHOOL PUBLISHING COMPANY, Bloomington, Illinois.

Subscribed to and sworn before me on
this twelfth day of February, 1935
(Notary's Seal)
Gussie C. Jabsen
Notary Public

THE STUDENT TEACHER AND HIGH SCHOOL ACHIEVEMENT

HARRY P. SMITH
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THE effect of student practice teaching on the achievement of the pupils is sure to be questioned where the practice teaching is done in a public school system. It is desirable, therefore, that administrators in whose school systems such work is being carried on should have data of an objective character on the basis of which they can inform those who may raise questions.

Meade[1] summarizes seven studies relating to the elementary schools and two relating to the high schools. In general it may be said that the studies made of the effect of student teaching on the achievement of elementary school children show no differences that can be called significant. The studies, however, lack the refinement of technic that should characterize such work.

One of the high school studies reported was made under Dr. Meade's supervision. It disclosed that through a period of years during which practice teaching prevailed, an Ohio rural high school raised its material and achievement standards sufficiently to be admitted to the North Central Association of Colleges and Secondary Schools, one of the earliest rural high schools in Ohio to achieve such distinction.

The second high school study reported was that of Dr. Carl G. F. Franzen,[2] of Indiana University, who studied the effect of student teaching on the achievement of high school pupils in the Bloomington, Indiana, public schools. There was no significant difference in achievement observable.

Benjamin C. Dyess[3] shows that third grade training school pupils made less progress than those of control groups not in the training school taking intelligence into consideration. But A. F. Elsea[4] shows pupils

[1] Meade, Arthur P. *Supervised Student Teaching* (Richmond, Virginia: Johnson Publishing Co., 1930), pp. 121-130.

[2] Franzen, Carl G. F. "Comparison of Results Made on Certain Standardized Tests in the Bloomington High School Who Were Taught in Classes of the Same Grade by University Student Teachers and by Regular High School Teachers," Bulletin No. 4, Vol. II, School of Education, Indiana University, March, 1926.

[3] Dyess, Benjamin C. *A Comparison of the Achievement of Third Grade Pupils Who Have Been Taught by Training School Teachers with the Achievement of Those Who Have Been Taught by Regular Teachers.* Unpublished Master's Thesis. Greeley, Colorado: Colorado State Teachers College, 1927.

[4] Elsea, A. F. "A Study of Student Teaching," *Peabody Journal of Education*, VII (May, 1930), pp. 345-350.

from grades three to eight under cadet teachers making a somewhat greater gain than those taught by regular teachers.

The inconclusive nature of the findings of these studies led to the studies reported here. Furthermore, it was felt that the presence of student teachers in the public secondary schools might become the subject of unfavorable criticism in the community if the effect of their work was not known.

In order that the results of this study may be interpreted clearly, the following statement of the student-teacher program in operation at Syracuse University is quoted from an article by Professor Ralph F. Strebel, Director of Teacher Preparation, Teachers College, Syracuse University.[5]

The student teaching is done in the senior year, during either the first or second semester in the public schools of Syracuse, N. Y. The following standards for the selection of student-teachers must be met: (1) A minimum average of "C" in his college work, (2) A minimum of "C" in Freshman English course, (3) Certification by designated authorities as to health and personality. The prerequisites for student teaching are: (1) A major in the work to be taught, (2) at least nine hours of education work, three of which must be in special methods of the subject to be taught, (3) fifteen hours of directed observation during the semester preceding that in which the teaching is done. Further, a student must not carry more than twelve hours of class work during the semester in which he is to teach.

Each student is assigned to a "coöperating teacher," a Syracuse public school teacher who, through training, experience and professional qualifications, is judged to be competent to act in the capacity of a supervising teacher. The supervisory program is carried on jointly by "university supervisors," who are campus teachers of special methods in their respective fields, the coöperating teachers, and public school supervisors and administrators.

The student teaching period is ten weeks in length, broken up into three units. The first, of approximately one week, is devoted to observation. This is followed by a period of participation graded in such a way that the student becomes increasingly active in class, until he is completely inducted into responsible room teaching. The period of participation is from one to three weeks in length depending on the growth of the student. The minimum period of responsible room teaching is six continuous weeks.

The student-teachers' classes are selected in such a way as to constitute a random sampling. They vary in size from twenty-five to forty-

[5] Strebel, Ralph F. *Educational Administration and Supervision*, XVIII (February, 1932), pp. 99-103.

five students. In general the student-teachers' groups are typical public school classes.

The student-teacher starts his work at the beginning of the second five weeks of the term and finishes at the close of the third five weeks. Thus the coöperating teacher has charge of the class for five weeks each at the beginning and end of the term. Because of this, the final semester grades are assigned by regular public school teachers and not student-teachers. In most instances uniform departmental final examinations are used in parallel classes. This phase of the plan removes any question which might arise concerning the validity of final grades assigned by student-teachers.

Professor Strebel pointed out in this article that one of the issues involved in any coöperative plan of student teaching operated in conjunction with a public school system is the quality of work done by pupils who are members of the classes in which the student-teachers carry on their work. He suggested that if the scholastic status is not lowered "the security of the program is enhanced." If on the other hand the achievement of the pupils indicates a lowering of scholarship levels, reorganization of the program must be effected to correct that condition.

To secure further information upon this point Professor Strebel made a study, the purpose of which was to compare the average scholastic status of the pupils in each of the student-teacher classes with that obtained by pupils in parallel classes who were instructed at the same time by the regular public school teacher. A total of 933 pupils were involved in the former and 2,715 in the latter.

He found the difference between the mean grades of the two groups in the different subjects in 21 of 23 cases to be so small that they were statistically insignificant. In two cases where the difference was great enough to be significant the means were larger for the student-teaching groups. He also found that the student-teaching did not increase the percentage of failures. From this study he concluded that the scholastic status of pupils in student-teacher classes was not affected adversely.

Stimulated by this study the Bureau of Educational Research, of Teachers College, coöperating with the Department of Research of the public school system set up an experiment employing control and experimental groups in several subjects. At the beginning of this experiment in February, 1932, all pupils in the control and experimental sections were given the Terman Group Test of Mental Ability and their scores determined. For each pupil having a given point score on this

TABLE I

EXPERIMENTAL AND CONTROL GROUPS IN EACH SUBJECT TOGETHER WITH TESTS USED

Name of Subject	Group	Number of Pupils Taking Preliminary Tests	Number of Pupils Paired	Name of Achievement Test Used in Preliminary and Final Testing
Algebra (1st sem.)	Experimental	37	17	Hots Algebra Scales
Algebra	Control	30	17	Hots Algebra Scales
American History	Experimental	35	21	Pressey-Richards American History Test
American History	Control	33	21	Pressey-Richards American History Test
Biology	Experimental	22	7	Ruch-Crossman Biology Test
Biology	Control	21	7	Ruch-Crossman Biology Test
Bookkeeping (1st year)	Experimental	31	19	Elwell-Fowlkes Bookkeeping Test
Bookkeeping	Control	29	19	Elwell-Fowlkes Bookkeeping Test
Civics	Experimental	20	16	Brown-Woody Civics Test
Civics	Control	28	16	Brown-Woody Civics Test
General Science	Experimental	38	20	Dvorak General Science Test
General Science	Control	33	20	Dvorak General Science Test
Geometry (1st sem.)	Experimental	22	9	Schorling-Sanford Geometry Test
Geometry	Control	35	9	Schorling-Sanford Geometry Test
German (1st year)	Experimental	17	8	Columbia Research Bureau German Test
German	Control	26	8	Columbia Research Bureau German Test
Physics	Experimental	12	10	Iowa Physics Test, Revised
Physics	Control	19	10	Iowa Physics Test, Revised

TABLE II

SCORES OF CONTROL AND EXPERIMENTAL GROUPS ON PRELIMINARY AND FINAL TESTS

CONTROL GROUP

TABLE II

SCORES OF CONTROL AND EXPERIMENTAL GROUPS ON PRELIMINARY AND FINAL TESTS

CONTROL GROUP

Subject	N	Mean Pre-Test Score (Point Score)	Mean Final Test Score (Point Score)	Mean Gain (Point Score)	S.D. of Gains	Mean Gain Percentile Score
Biology	7	8.14	17.57	9.43	11.13	5.43
Civics	16	90.13	96.13	6.0	11.11	9.63
Bookkeeping	19	55.18	62.16	6.98	10.37	2.32
General Science	20	87.6	81.4	− 6.2*	3.95	9.35
German	8	32.0	45.5	13.5	18.53	1.13
Plane Geometry	9	4.11	11.33	7.22	6.84	3.78
Algebra	17	15.65	14.29	− 1.36	3.88	.....†
American History	21	51.8	59.66	7.86	6.70	.....
Physics	10	32.8	43.6	10.8	14.45	.....

EXPERIMENTAL GROUP

Biology	7	15.71	24.0	8.29	2.22	5.56
Civics	16	92.63	95.88	3.25	12.83	4.94
Bookkeeping	19	52.97	64.24	11.27	7.82	16.16
General Science	20	79.50	79.35	− .15	6.90	− .45
German	8	37.25	50.5	13.25	8.99	1.13
Plane Geometry	9	4.67	10.0	5.33	2.46	2.67
Algebra	17	16.41	16.65	.23	5.12	.....†
American History	21	52.8	58.47	5.67	6.50	.....
Physics	10	25.9	41.2	15.3	8.52	.....

*The form used in the preliminary test of the control group was 1 P. E. less in difficulty than the form used in the preliminary test of the experimental group. Correction was made in percentile scores, but not in the point scores.

†Percentile scores not available for tests in Algebra, Physics, and American History.

TABLE III

COMPARISON OF SCORES OF CONTROL AND EXPERIMENTAL GROUPS

Classes	N	Mean Gain of Control Group	S.D. of Control Group	S.D. of Mean of Control Group	Mean Gain of Experimental Group	S.D. of Experimental Group	S.D. of Mean of Experimental Group	Diff. of Means	S.D. of Diff. of Means	Diff. of Means / S.D. of Diff. of Means
Biology, Civics Bookkeeping, General Science, German and Plane Geometry, combined	79	5.899*	12.35	1.39	6.215	13.95	1.57	−.316	2.096	−.15
Algebra	17	−1.35†	3.88	.89	.23	5.12	1.54	−1.58	2.429	−.32
American History	21	7.86†	6.70	1.46	5.67	6.50	1.42	2.19	2.08	1.05

*Percentile scores throughout.

†Point scores throughout.

test in an experimental group, another pupil of the same sex and approximately the same point score was selected in the control group. A pre-test was then given to the members of each group which was in every case a well-known standardized test in the subject matter being taught. A summary of the data relating to the control and experimental groups is presented in Table I. The groups were matched on the basis of comparable scores on the Terman Group Test of Mental Ability.

At the close of the student-teaching period, final tests were given using equivalent forms of the tests. Both the control and the experimental groups were tested simultaneously. The testing in every instance was done under the direction of a psychological examiner attached to the Department of Research of the Syracuse Public School System. The results are given in Table II.

Larger gains are recorded for the control groups in General Science, Civics, and Plane Geometry as shown by percentile scores, and for the experimental groups in Bookkeeping and Biology, with the gains equal in German. For the groups for which only point scores were available, a larger gain for the control group was shown in American History, while the experimental groups showed larger ones in Physics and Algebra. Thus gains were larger for the control groups and for the experimental groups in an equal number of cases with one subject showing equal gains for both. From these data, it would appear that no general statement can be made about the effects of the presence or absence of student teachers.

To secure further evidence as to the effect of the presence or absence of student teachers upon pupil achievement the 79 pupils in the six groups for which percentile scores were available were then grouped together and the reliability of the difference in the gains of the two groups computed. The gains in Algebra and American History were treated separately though the small number of cases tends to lessen the significance of the results. Physics was disregarded since there were but ten cases.

The difference between the mean gains, the standard error of the difference and the ratio of the difference of the means to the standard error of their difference are given in Table III.

The mean gain is larger for the experimental groups in the case of the composite of 79 matched pairs for which percentile scores were available but the ratio of the difference of the means to their standard error is far too small to be statistically significant. The mean gain in

Algebra was also greater for the experimental group, but statistically not significant. In American History, on the other hand, the mean gain was greater for the control group, but again, it was not statistically significant.

We, therefore, conclude that the presence of student teachers in these classes under the conditions obtaining in Syracuse at present may or may not effect the achievement of the pupils adversely.

THE EFFECT OF FATIGUE OR BOREDOM ON TEACHERS' MARKS

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THIS study was made possible by the coöperation of a class of thirty advanced students, most of whom were planning to teach. The purpose of the experiment was not told them until after its completion; but they were told to be especially careful and painstaking, which they accordingly were.

In order to eliminate part of the subjective element in grading, and yet retain part, the writer decided to use penmanship as the subject-matter for scoring, utilizing the Thorndike Scale. That scale, it will be remembered, proceeds point by point from the poorest sample, Quality 4, which is almost illegible, to Quality 18, which is perfect, humanly speaking. The scale thus has a total of 15 qualities, with Quality 11 approximately average writing. For use in this experiment, 400 samples of penmanship were secured from local schools.

In order to familiarize themselves thoroughly with the scale, the students were required to use it in grading papers for three hours. The class period on three alternate days was given over to that purpose. At the end of that time they were surely as capable of using it accurately as the average teacher would be. Then on the assumption that teachers habitually, or at least frequently, spend in the neighborhood of three hours consecutively (a whole evening, say, or most of an afternoon) in grading papers, each student was asked to come to the laboratory at a time chosen by herself, when she could stay a full three hours. Since usually not more than two or three girls were working at once, there was no disturbance, but an atmosphere of work.

On her arrival each girl was given a mimeographed sheet with the 400 samples listed, as Sample 1, Sample 2, etc., with a space after each sample for inserting its quality. No marks other than the sample number were placed on the specimens themselves. Then if she finished all the samples before the time was up, she handed in her sheet, took a fresh one, and started all over again, working till three hours had passed. In that way a check was gotten on the work of several, noting the variation on re-grading. An additional check was provided in this way also: in a number of cases a paragraph or page written by some one person had been cut up to furnish several samples, and thus the same *actual* though

not the *identical* writing occurred from 2 to 7 times throughout the period. These repetitions were of marked value, as were the re-scorings, in revealing the nature of the variations. They were introduced in the hope of discovering whether or not there is a tendency, not merely toward a different score, but toward a consistently more lenient, or more severe one.

In organizing the study as indicated it was expected that *if* fatigue (or boredom) is a factor contributing to variability, that factor would manifest itself by way of producing more variation at the end than at the beginning of the period.

Now as to the method of handling the results: first the average score assigned by each student was calculated. There was a range of three full points, which is 20 percent of the entire range of the scale, varying from Quality 9.8, the most severe, to Quality 12.8, the most lenient, with the median at 11.4. (That would be comparable, on a scale ranging from 1 to 100, with the mid-point at 50, to correspond with 11 as the mid-point of the Thorndike Scale, with a grade of 42 on the one hand, and 62 on the other; or on a scale ranging from "failure" at 60, to 100 as perfect, with the average at 80—a more or less usual marking system—with about 77, or 'D" on the severe side, and about 85, or "C" on the other. The distribution, which approached the normal curve, is reproduced in Table I, grouped in half-points.

TABLE I

DISTRIBUTION TABLE SHOWING AVERAGE SCORES ASSIGNED

Scores	9.5	10	10.5	11	11.5	12	12.5
Frequency	1	2	5	9	8	4	1

Next the type of variation in each person's scoring was noted; whether merely erratic, or tending toward severity or leniency as the work period lengthened. Of the 30 scorers, one was exceptionally consistent, both in her re-scoring and in her scoring of the samples of handwriting entered more than once. (There were 30 of these entered four times each, besides a few scattered ones, some repeated but once, and others oftener.) Consistently increasing severity, both on scoring of the repeated samples and on re-scoring of work done early in the work period was shown by 10 girls, and increasing leniency by 17. Two girls were erratic, showing no consistent trend, one tending toward leniency in the scoring of the repetitions, but toward severity in her re-scoring of earlier work, while the other just reversed that. There was a pronounced tendency for the

severity to be shown by the brighter students, there being only one exception to that.

Third, a correlation was figured between the ratings given by two individuals to the first 100 samples they scored, and another between the last 100. (It should be mentioned that students were instructed to start with any samples not in use upon their arrival for work, but to continue serially from the point at which they started. For instance, if they began with Sample 201, they should continue through Sample 400, then go back to Sample 1. No skipping about was allowed. In that way the time element was easily controlled.) These pairs of correlations, then, concerned sometimes Samples 301-400 as the first 100 done, finishing with Samples 201-300 as the last. But in every case, regardless of the individual's tendencies toward severity or leniency, the correlation between the first 100 samples was higher than that between the last. That seemed to demonstrate a distinct decrease in accuracy of scoring as time progressed. Typical correlations for these contrasts between scorings of first 100 samples and last 100 are given in Table II.

TABLE II

TYPICAL r's SHOWING INCREASING LACK OF AGREEMENT IN SCORING

	r	P.E.	r	P.E.	r	P.E.	r	P.E.
First 100 scores	.677	.036	.694	.034	.726	.032	.802	.024
Last 100 scores	.593	.044	.659	.038	.652	.039	.584	.045

The strikingly great discrepancy between the last two pairs given above is to be explained by the fact that one individual was tending toward leniency and the other toward severity.

The fourth and last aspect of the scores to be considered concerns that same point, namely the increasing variation. The average and the average deviation of each sample were calculated, the purpose being to compare the average deviations of a sample when scored either (a) early in a girl's work period, (b) late in the period, or (c) when re-scored still later in the period. In 75 percent of the cases, there was a constant increase in the average deviation in the order above given. When a sample was rated early in the period its average deviation was lowest, when late, the average deviation was higher, and when scored a second time in the same period, its average deviation was still higher. Typical illustrations of this appear in Table III.

In the column above headed "Range" striking differences in ratings are to be observed. Sample 331 ranges from a rating of little more than

TABLE III

SHOWING TYPICAL DISCREPANCIES IN AVERAGE DEVIATION

Sample	Range	Average score	A.D. of early scorings	A.D. of later scorings	A. D. of rescorings
2	5–11	7.2	.66	.74	.83
5	8–11	9.2	.72	.82	1.00
13	6–11	8.8	.72	.76	.97
26	6–15	11.3	1.82	1.10	1.42
331	6–16	12.2	1.12	1.29	1.96
360	9–16	12.9	.98	.86	1.11

legible to one of very excellent. The distribution of ratings given it, however, as is the case with practically all the samples, approaches the normal curve. The majority of the samples showed a range of either 6 or 7 points. Some individual re-scorings, also, show a change of opinion on the part of the scorer to the extent of 6 points, though the mean variation for the group on re-scoring was 1.2. Of course that would be very small on a scale of 100, but if, as was suggested earlier in this paper, this scale were made the equivalent of one of 100, its size would be more apparent, being 8 percent of the entire range.

CONCLUSIONS

1. There are conspicuous variations in teachers' marks even when, as in the use of a semi-objective measure, like the Thorndike Scale, the subjective element is partly eliminated. These variations are evident both in marks given by different scorers to the same work, and in re-scoring of work by an individual.

2. There is usually a consistent tendency on the part of a scorer toward either increasing severity or increasing leniency. In other words, this variability is not, as a rule, merely different, or erratic.

3. Teachers' marks given early in a period tend definitely to agree more closely than do those given later in a work period. The moral of this, in the interest of fairness, seems to be not to work for too long a period at the grading of papers. One's inaccuracy keeps increasing.

PRACTICE MATERIAL IN THE ESTIMATION OF THE QUOTIENT IN LONG DIVISION FOUND IN CURRENT ARITHMETIC WORKBOOKS

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IN a previous article[1] the writer made an analysis of the examples in long division as found in nine current textbook series in arithmetic. It was found that there was little uniformity in the method suggested for estimating the quotient and in the number and types of examples given in each textbook. This study makes a similar analytical classification of the estimations of the quotient for the different division examples found in current arithmetic workbooks.

The selection of the workbooks to be included in this study was based on the manner in which they were issued. Each workbook to be selected had to be issued in a series of separate booklets for each grade for Grades III-VIII, inclusive. Since none of the booklets for the third grade contained long division examples, the booklets scrutinized were for Grades IV-VIII, inclusive. An effort was made to include every series of practice booklets by different authors now extant which satisfied the criterion of having a separate booklet for each grade above the third and extending through the eighth. If an author or a group of authors had written more than one series of workbooks, the edition having the latest copyright date was the only series considered for that author or group of authors. A separate booklet for each grade was essential to make the results obtained from the study comparable.

The series had to cover the work for grades four to eight inclusive in order to make the results from this study comparable to those derived from the analysis of textbooks. In the latter case, the series of textbooks contained the subject matter of arithmetic for grades three to eight inclusive. Using the criterion of having all possible workbook series consist of a separate booklet for each grade from the third to the eighth inclusive, nine different series were selected.

In the study of textbooks the method for estimating the quotient was classified under three headings. Two of these methods of estimation are used in this study. They are: First, the apparent method in which

[1] Grossnickle, Foster E. "Practical Material in the Estimation of the Quotient in Long Division Found in Current Textbooks," *Elementary School Journal*, XXXIII (October, 1932), pp. 130-41.

the tens' figure is used as the guide figure regardless of the value of the units' figure. Second, the increase-by-one method in which the tens' figure is used as the guide figure when the units' figure is 5 or less; the guide figure is increased by one when the units' figure is 6 or more. In this study, the method of estimation of the quotient was not given for five of the series. For three of the series the authors recommended the apparent method and for the other series, the increase-by-one method was to be used. Throughout this study the workbook series will be designated by a code letter. The code letter, the method of estimation, and the copyright dates are given in Table I.

TABLE I

CLASSIFICATION OF WORKBOOK SERIES WITH RESPECT TO METHOD USED IN ESTIMATION OF QUOTIENT

Workbook Series	Method of Estimation	Copyright Date
A	Apparent	1930
B	Apparent	1928
C	Apparent	1932
D	Increase-by-one	1932
E	Unknown	1928
F	Unknown	1930
G	Unknown	1931
H	Unknown	1926
K	Unknown	1929

For the five series of workbooks in which the method of estimation of the quotient was unknown, each estimation was classified under both methods. Hence, for the series coded E, F, G, H, and K, each estimation was classified according to the apparent and the increase-by-one methods.

As in the previous study, only abstract examples in division were considered. Furthermore, the divisor contained two and only two significant figures. This excluded decade divisors, such as 20, 30, etc., and divisors containing three or more digits. Likewise, examples involving division of decimals, percent, dollars and cents, and verbal problems were not classified in this analysis. Although the estimations found in the latter four groups were not classified, the total number of estimations in each group was considered. The number of estimations for an example represented the number of figures in the quotient. Thus, if the quotient is 200, three different estimations are required even though there is a repetition of two of the digits.

CLASSIFICATION OF ESTIMATIONS IN LONG DIVISION

The same classification for estimations of the quotient will be used in this study as was used when an analysis was made of the textbook series.

For the apparent method the classification is as follows:

1. The quotient is self-evident, as in the example $24\overline{)\ 26}$.
2. The estimated quotient is the true quotient, as in the example $24\overline{)\ 48}$.
3. The true quotient is one less than the estimated figure but the need for correction is self-evident, as in the example $24\overline{)\ 82}$.
4. The true quotient is one less than the estimated figure but the need for correction is not self-evident, as in the example $24\overline{)\ 92}$.
5. The true quotient is two less than the estimated figure, as in the example $24\overline{)\ 183}$.
6. The true quotient is three less than the estimated figure, as in the example $28\overline{)\ 185}$.
7. The units' figure of the divisor is 9.
8. The divisor is a "division demon." The divisors from 13 to 18 represent this group.

For the increase-by-one method, each estimation may be placed under one of the following classifications:

1. The quotient is self-evident.
2. The estimated quotient is the true quotient.
3. The true quotient is one less than the estimated figure but the need for correction is evident.
4. The true quotient is one less than the estimated figure but the need for correction is not evident.
5. The true quotient is two less than the estimated figure.
6. The true quotient is one more than the estimated figure, as in the example $26\overline{)\ 145}$.
7. The true quotient is two more than the estimated figure, as in the example $26\overline{)\ 235}$.
8. The units' figure of the divisor is 9.
9. The divisor is a "division demon."

In the classification given above, illustrations for the first five items are the same as the list for the apparent method. It must be remembered that the tens' figure of the divisor is made one more only when the units'

figure is 6 or more. Each estimation for all abstract division examples that had a significant two-figure divisor for the first three workbook series was classified according to the first classification. For Series D, the second classification was used. For the remaining series, each estimation was classified according to both classifications.

CLASSIFICATION OF THE ESTIMATIONS IN NINE WORKBOOK SERIES

As each classification of estimations is given in the table, the possible number of such estimations is given. The classifications of the results for Series A, B, and C are shown in Table II. The authors of these three workbook series recommended the apparent method. One of the authors of Workbook A was the author of the textbook series which had the same code letter in the former study. The authors of the Workbooks B and C were the authors of the Textbooks B and C of the previous study.

TABLE II

CLASSIFICATIONS OF ESTIMATIONS IN THREE WORKBOOK SERIES USING THE APPARENT METHOD OF FINDING THE QUOTIENT FIGURE

Classification	Possible Number of Examples	Workbook Series A: Number of Examples in Series	Workbook Series A: Percentage of Possible Number	Workbook Series B: Number of Examples in Series	Workbook Series B: Percentage of Possible Number	Workbook Series C: Number of Examples in Series	Workbook Series C: Percentage of Possible Number
1. Quotient is self-evident	4,200	88	2.10	164	3.90	110	2.62
2. Estimated quotient figure is true quotient	22,052	583	2.64	619	2.80	532	2.41
3. True quotient is one less than estimated quotient, but need for correction is evident	4,366	73	1.67	191	4.37	86	1.97
4. True quotient is one less than estimated quotient, but need for correction is not evident	6,983	102	1.46	152	2.18	156	2.23
5. True quotient is two less than estimated quotient	672	22	3.23	75	11.15	71	10.57
6. True quotient is three less than estimated quotient	37	1	2.70	2	5.41	8	21.62
7. Divisor ends in 9	5,310	139	2.62	98	1.84	233	4.39
8. Division demons	930	73	7.85	280	30.10	94	10.11
Total	44,550	1,081	2.43	1,581	3.54	1,290	2.90

Perhaps one of the most striking things to be found in Table II is the amount of agreement among the various classifications. This is

in direct contrast to the situation found among the textbooks having the same code letters. (There were two extra authors for the Workbook Series A who were not included for Textbook Series A.)

Table III shows the classifications of the estimations for Workbook D. In this series the increase-by-one method was used for estimating the quotient. The author of this workbook is one of the authors of the textbook series in the former study which used the same code letter. In this study only Series D recommended the use of the increase-by-one method of estimation of the quotient.

TABLE III

CLASSIFICATION OF ESTIMATIONS IN WORKBOOK SERIES D WHICH USED THE INCREASE-BY-ONE METHOD OF FINDING THE QUOTIENT FIGURE

Classification	Possible Number of Examples	Number of Examples in Series	Percentage of Possible Number
1. Quotient is self-evident	4,200	349	8.31
2. Estimated quotient is true quotient	25,656	1,722	6.71
3. True quotient is one less than estimated quotient, but need for correction is evident	2,781	194	6.98
4. True quotient is one less than estimated quotient, but need for correction is not evident	2,415	98	4.06
5. True quotient is two less than estimated quotient	108	4	3.70
6. True quotient is one more than estimated quotient	3,142	252	8.02
7. True quotient is two more than estimated quotient	8	1	12.50
8. Divisor ends in 9	5,310	401	7.55
9. Division demons	930	221	23.76
Total	44,550	3,242	7.28

The total number of estimations given in Table III is strikingly large in comparison with the number of estimations given for each series found in Table II. Workbook D contained almost three times as many estimations as Series A.

Table IV gives an analysis of the Workbook Series E, F, G, H, and K. In these series no specific recommendation had been made by the authors as to which method should be used to estimate the quotient figure. Hence, the writer catalogued each estimation in these series according to the classifications given for the apparent method.

From the previous table it is seen that in many of the classifications there was not much variation. However, in two of the classifications there was much diversity. First, in the number of estimations in

which the estimated quotient was the true quotient. Series K had almost four times as many estimations of this type as Series G; Series E had almost three times as many as Series G; Series F had about twice as

TABLE IV

CLASSIFICATIONS OF ESTIMATIONS FOR WORKBOOK SERIES E, F, G, H, AND K, WHEN THE APPARENT METHOD OF FINDING THE QUOTIENT IS USED

Classification	Possible Number of Examples	Workbook Series E		Workbook Series F	
		Number of Examples in Series	Percentage of Possible Number	Number of Examples in Series	Percentage of Possible Number
1. Quotient is self-evident	4,200	166	3.96	104	2.48
2. Estimated quotient is true quotient	22,052	715	3.24	535	2.43
3. True quotient is one less than estimated quotient, but need for correction is evident	4,366	199	4.56	70	1.60
4. True quotient is one less than estimated quotient, but need for correction is not evident	6,983	161	2.31	156	2.24
5. True quotient is two less than estimated quotient	672	55	8.20	13	1.93
6. True quotient is three less than estimated quotient	37	2	5.41	0	0.00
7. Divisor ends in 9	5,310	171	3.22	107	2.02
8. Division demons	930	160	17.20	16	1.72
Total	44,550	1,629	3.66	1,001	2.25

Workbook Series G		Workbook Series H		Workbook Series K	
Number of Examples in Series	Percentage of Possible Number	Number of Examples in Series	Percentage of Possible Number	Number of Examples in Series	Percentage of Possible Number
59	1.41	112	2.67	233	5.55
255	1.16	471	2.14	974	4.42
51	1.17	94	2.15	150	3.44
84	1.20	108	1.55	156	2.24
29	4.32	16	2.38	26	3.87
1	2.70	2	5.41	0	0.00
75	1.41	75	1.41	126	2.38
35	3.76	107	11.51	69	7.42
589	1.32	985	2.21	1,734	3.89

many as Series G; and Series H almost twice as many as Series G. There is also much variation in the number of estimations classified as division demons. Series E gave practice in exactly ten times as many estimations as Series F and almost five times as many as Series G. The de-

mons constitute the most difficult group of division estimations. Perhaps the number of these estimations to be included in a practice booklet is not known, but at least one may be certain that a total of 16 for a whole series of booklets, as found in Series F, is too few.

Since no particular method was given for estimation of the quotient in Series E, F, G, H, and K, each example was classified according to

TABLE V

CLASSIFICATIONS OF ESTIMATIONS FOR WORKBOOK SERIES E, F, G, H, AND K WHEN THE INCREASE-BY-ONE METHOD OF FINDING THE QUOTIENT IS USED

Classification	Possible Number of Examples	Workbook Series E		Workbook Series F	
		Number of Examples in Series	Percentage of Possible Number	Number of Examples in Series	Percentage of Possible Number
1. Quotient is self-evident	4,200	166	3.96	104	2.48
2. Estimated quotient is true quotient	25,656	784	3.05	578	2.45
3. True quotient is one less than estimated quotient, but need for correction is evident	2,781	103	3.70	35	1.26
4. True quotient is one less than estimated quotient, but need for correction is not evident	2,415	44	1.86	29	1.20
5. True quotient is two less than estimated quotient	108	9	8.34	0	0.00
6. True quotient is one more than estimated quotient	3,142	192	6.11	132	4.20
7. True quotient is two more than estimated quotient	8	0	0.00	0	0.00
8. Divisor ends in 9	5,310	171*	3.22	107	2.02
9. Division demons	930	160	17.20	16	1.72
Total	44,550	1,629	3.66	1,001	2.25

Workbook Series G		Workbook Series H		Workbook Series K	
Number of Examples in Series	Percentage of Possible Number	Number of Examples in Series	Percentage of Possible Number	Number of Examples in Series	Percentage of Possible Number
59	1.40	112	2.67	233	5.55
267	1.04	475	1.85	944	3.68
25	1.90	75	2.70	84	3.20
19	0.79	40	1.66	42	1.74
5	4.63	4	3.70	3	2.78
104	3.33	97	3.08	230	7.32
0	0.00	0	0.00	3	37.50
75	1.41	75	1.41	126	2.38
35	3.76	107	11.51	69	7.42
589	1.32	985	2.21	1,734	3.89

both methods. Table IV shows the estimations classified according to the apparent method. Table V shows the estimations classified according to the increase-by-one method.

An analysis of Tables IV and V will show the relative merits of each method in obtaining the true quotient figure for each estimation. The number of estimations in which the quotient is self-evident, the divisor ends in 9, and the divisor is a division demon, will be the same for each method. However, there is a difference in the number of estimations in which the estimated quotient is the true quotient for the two methods. Then it naturally follows that there must also be a difference for the two methods in the number of estimations in which the estimated quotient has to be corrected in order to find the true quotient. This latter number is composed of two groups or types; namely, those in which the need for correction is evident or is not evident. To the writer, the group of estimations which need to be corrected to find the true quotient when the need for correction is not evident constitutes one of the most difficult parts of long division. When the apparent method is used, the number of estimations of this type is obtained in Table IV by finding the sum of items 4, 5, and 6; and when the increase-by-one method is used, the number of estimations in this group is obtained in Table V by finding the sum of items 4, 5, 6, and 7. The number of estimations in which the estimated quotient is the true quotient and the number of estimations which need to be corrected to find the true quotient when the need for correction is not evident by both methods for Series E, F, G, H, and K are shown in Table VI.

TABLE VI

NUMBER OF ESTIMATIONS WHICH GIVE TRUE QUOTIENT AND WHICH NEED TO BE CORRECTED TO FIND TRUE QUOTIENT WHEN NEED FOR CORRECTION IS NOT EVIDENT BY BOTH METHODS FOR SERIES E, F, G, H, AND K

Series	Apparent Method		Increase-by-one Method	
	Estimated Quotient Is True Quotient	Need for Correction Is Not Evident	Estimated Quotient Is True Quotient	Need for Correction Is Not Evident
E	715	218	784	245
F	535	169	578	161
G	255	114	267	128
H	471	126	475	141
K	974	182	944	278

Table VI shows that the method used to estimate the quotient makes a difference in the accuracy of the estimations found in a given workbook. If the increase-by-one method is used to estimate the quotient for the examples in Series F, the true quotient will be found in more cases and fewer corrections will need to be made than if the apparent method is used. On the other hand, the apparent method was decidedly the superior of the two methods for Series K. Very probably the increase-by-one method was slightly superior in Series E and the apparent method was more preferable for Series H. For Series G there was little difference between the two methods. These data show that in most cases the method used for estimating the quotient had a distinct bearing on the accuracy of the estimated figure.

VARIABILITY AMONG THE WORKBOOK SERIES

From a study of Tables II, III, IV, and VI, it is seen that there is much variability in certain classifications among the different series of workbooks analyzed. Three classifications merit special consideration: (1) the total number of estimations which need to be corrected when the need for correction is not evident; (2) the total number of estimations classified as division demons; (3) the total number of estimations which are given in a workbook series. Only the apparent method of estimation will be considered for Series E, F, G, H, and K.

Finding the true quotient figure, when the estimated figure has to be corrected and the need for correction is not evident, represents one of the very difficult spots in long division. The writer considers this classification the most difficult step in long division. When the apparent method is used, the true quotient figure may be one, two, or three less than the estimated figure, assuming the division demons and the divisors ending in 9 are excluded. Excluding the same divisors, the true quotient may be either one or two less, or one or two more than estimated figure when the increase-by-one method is used.

For the nine series studied, Series K contained the median number of estimations which need to be corrected to find the true quotient when the need for correction is not evident. The number of estimations in Series D was almost twice this median. On the other hand the median was over fifty percent more than the number of estimations in Series G.

Not only was there variation in the number of estimations, but the distribution of these estimations within each series was very irregular. The sequence of these estimations within a given series of workbooks

is a factor in the learning of the process and also in the retention of that process. The distribution of estimations given under this classification is shown in Table VII. To make this table, each series of workbooks was divided into periods of 50 pages each. This number of pages was selected as a unit because it represents the approximate work unit for each half year of work for the class that uses four of the workbooks, namely, Series B, C, G, and H.

TABLE VII

DISTRIBUTION WITHIN A WORKBOOK SERIES IN INTERVALS OF 50 PAGES OF THE ESTIMATIONS WHICH NEED TO BE CORRECTED WHEN THE NEED FOR CORRECTION IS NOT EVIDENT

50-Page Intervals	Workbook Series								
	A	B	C	D	E	F	G	H	K
1	0	0	0	0	0	0	0	47	0
2	0	144	44	3	47	0	55	24	72
3	42	7	85	11	22	37	36	0	53
4	40	42	5	100	41	29	5	14	11
5	16	9	54	0	20	1	4	0	17
6	3	9	0	0	36	12	1	16	2
7	0	0	21	85	0	26	2	0	10
8	6	1	1	4	38	4	0	18	1
9	6	8	25	34	0	12	9	0	1
10	0	9*	0*	6	10	6	0	7*	13
11	0			4	2	10	2*		2
12	3			0	0	5			0*
13	6			52	2*	0			
14	2			4		0			
15	1*			5		17			
16				47*		5			
17						2			
18						3*			
Total	125	229	235	355	218	169	114	126	182

*End of series.

Table VII shows some very irregular distributions for the estimations which need to be corrected to find the true quotient when the need for correction is not evident. Series A and B offer only 12 and 18 estimations, respectively, of this type in the booklets for Grades VII and VIII. Series G contains only 18 similar estimations for Grades VI, VII, and VIII. It is difficult to know what should be the correct distribution of these estimations in order to provide for adequate practice material for the acquisition and maintenance of skill with a particular difficulty. Thorndike made an analysis of practice material in the fundamental operations in different textbooks and found extreme variation in the distribution of the exercises. His conclusions are per-

tinent at this time. "Each ability has it peculiar needs in this matter, and no set rules are at present of much value. It will be enough for the present if we are aroused to the problem of distribution, avoid obvious follies like those just noted, and exercise what ingenuity we have."[2]

The grade placement of long division in Series H was very unique compared with the other series. It is readily seen that long division was introduced in the first fifty pages of the booklet for the fourth grade in this series. Furthermore, there were 47 estimations within this introductory material dealing with long division in which the true quotient was found by correcting the estimated figure when the need for correction is not evident. In all of the other eight series of booklets, estimations of this type were introduced after the pupil had progressed further in the fourth grade. Series D was very noteworthy in this respect.

The second place which showed considerable variation among the nine series was in the number of examples classified as division demons. In this group the divisor is any number from 13 to 18 inclusive. These divisors constitute the most difficult group of divisors possible for two-figure numbers because of the large percentage of corrections which are necessary for the estimated figure in order to find the true quotient. If the apparent method is used, the true quotient may be four less than estimated; if the increase-by-one method is used, the true quotient may be three less or two more than the estimated figure. Hence, to divide well by the demon divisors, the pupil is obliged to use an extensive trial and error procedure, or else know the multiplication facts for these divisors. In either event, one may naturally assume that considerable practice should be given to this group of divisors.

Series B contained seventeen and one-half times as many estimations classified as division demons as did Series F. Series D offered almost fourteen times as many of these estimations as did Series F. If Series B and D contained the correct number of division demons for practice material, how inadequate to meet this demand must be Series F and G!

The distribution of these estimations throughout a given series may be seen from an examination of Table VIII.

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[2]Thorndike, Edward L. *The Psychology of Arithmetic* (New York: The Macmillan Company, 1922), p. 168.

TABLE VIII

DISTRIBUTION WITHIN A WORKBOOK SERIES OF THE ESTIMATIONS WHEN THE DIVISOR IS A DIVISION DEMON

50-Page Intervals	Workbook Series								
	A	B	C	D	E	F	G	H	K
1	0	0	0	0	0	0	0	28	0
2	0	122	13	0	47	9	28	27	22
3	0	61	35	25	12	7	3	0	33
4	45	53	2	69	3	0	0	17	4
5	8	16	22	0	11	0	0	0	3
6	7	10	0	0	23	0	0	8	0
7	3	0	9	66	0	0	4	0	7
8	0	0	0	0	44	0	0	21	0
9	0	14	13	31	0	0	0	0	0
10	0	4*	0*	0	11	0	0	6*	0
11	0			0	6	0	0*		0
12	0			0	0	0			0*
13	10			24	3*	0			
14	0			0		0			
15	0*			0		0			
16				6*		0			
17						0			
18						0*			
Total	73	280	94	221	160	16	35	107	69

*End of series.

Table VIII shows that the distribution of the estimations classified as division demons was very unsatisfactory for Series F. All of these difficult division examples were found in the booklet for the fourth grade. If the pedagogical maxim is true that the difficult exercises should be practiced most frequently, then the arrangement of the division exercises in Series F was greatly in error. Most certainly the sequence of the subject matter for the division demons was much more commendable for Series B and E than for Series F and G.

The third place in which much variability occurred among the nine series was in the total number of division estimations offered for each series. It is difficult for an author to know how many examples should be included in a workbook series; however, there should be more uniformity of agreement as to what this number should be than occurred in the nine series studied. Series D contained almost five and one-half times as many division estimations as Series G. Series C offered the median number of estimations, a total of 1290. This number was over twice as many as given in the Series G, and less than half the number given in Series D. Variations of such amounts would seem to indicate that extreme scrutiny should be made of a series of workbooks

before a series is adopted for instructional purposes. The sequence of the number of estimations for each series is shown in Table IX.

TABLE IX

DISTRIBUTION WITHIN A WORKBOOK SERIES OF THE TOTAL NUMBER OF ESTIMATIONS

50-Page Intervals	Workbook Series								
	A	B	C	D	E	F	G	H	K
1	0	0	39	0	0	0	16	320	0
2	0	945	342	245	342	185	290	210	756
3	504	182	406	122	136	215	159	0	513
4	231	162	45	1278	243	163	17	135	111
5	84	68	277	0	158	20	27	0	110
6	32	76	0	18	252	43	10	112	15
7	8	0	86	592	0	110	20	0	102
8	59	13	5	27	326	11	2	127	27
9	37	116	90	252	0	36	37	0	9
10	2	19*	0*	48	129	12	0	81*	73
11	16			36	32	70	11*		18
12	19			0	0	25			0*
13	64			315	11*	9			
14	13			18		8			
15	12*			18		55			
16				273*		18			
17						6			
18						15*			
Total	1081	1581	1290	3242	1629	1001	589	985	1731

*End of series.

Table IX shows that the distribution of the exercises was very commendable. All of the series had the greatest number of examples in the first two or three intervals of 50 pages of subject matter after the topic of long division has been introduced. Series A and F had very noteworthy distributions. The booklets in both of these series contained many more pages than in any other series except Series D. These two series also had fewer than the median number of estimations for the nine series studied, yet the estimations were so distributed in these two series that division examples were included in each 50-page interval after the topic of long division had been introduced.

The division examples were distributed in a very unusual manner in Series H. The booklets for Grades V-VIII, inclusive, offered no new division examples in the first half of each booklet for these grades. The author of this series repeated the identical division exercise in these booklets that was given in the first half of the booklet for Grade IV. The writer did not include these repetitions in this study. If these had been included, there would be 320 for each zero, given under Series

H, in Table IX. This would have made a total of 2265 estimations for this series. Since these 1280 estimations were mere duplications, they were not included in this study.

A fourth factor in the variation among the workbook series was the number of different divisors used in a series. There are 81 possible two-figure divisors, not including the decade divisors, such as 20, 30, 40, etc. Very probably it is not necessary for each divisor to be included in a given series, but if all of these 81 divisors are used, there is evidence that the exercises were prepared with greater care than when some of the divisors are omitted. The number of two-figure divisors omitted from each series is shown in Table X.

TABLE X

TWO-FIGURE DIVISORS NOT USED IN EACH OF THE NINE WORKBOOK SERIES FOR ABSTRACT EXAMPLES

Workbook Series	Significant Two-figure Divisors Not Used	Total Number of Divisors Not Used
A	11, 22, 33, 44, 55, 66, 77, 88, 99	9
B	None	0
C	91	1
D	None	0
E	44, 51, 58, 71, 78, 79, 81, 87, 88, 89, 93, 95, 97	13
F	16, 18, 33, 35, 55, 95	6
G	11, 12, 55, 61, 71, 82, 88, 91, 97, 98, 99	11
H	None	0
K	99	1

Workbook Series E and G omitted many of the large divisors found in the highest decades. It may not be necessary for the pupil using these workbooks to have practice with these divisors, but when the divisors are omitted, the teacher has no assurance that a pupil is able to divide by all possible two-figure divisors. Series F contained no division examples in which the divisor was 16 and 18. These two divisors constitute part of the group of division demons. It seems most unwise to omit these two divisors from a workbook series because the pupil is obliged to guess the quotient figure in many cases when the divisor is one of these numbers.

To get a complete picture of practice material in workbooks in long division, it is necessary to consider the division exercises found in examples expressed in dollars and cents, verbal problems, decimals, and percent. Although practice in division is not the chief objective for solving examples found in the four places enumerated, the division process is employed. Therefore, in order to get a more complete survey

of the nine series of workbooks used in this study, the number of estimations was found in each series for examples expressed in dollars and cents, verbal problems, decimals, and percent. As in the analysis of the abstract examples, only significant two-figure divisors were considered, however, no attempt was made to classify each estimation. The number of estimations for two-figure divisors found in examples using dollars and cents is given in Table XI.

TABLE XI

DISTRIBUTION IN 50-PAGE INTERVALS IN THE DIFFERENT WORKBOOKS OF ESTIMATIONS FOR TWO-FIGURE DIVISORS WHEN THE DIVIDEND WAS EXPRESSED IN DOLLARS AND CENTS

50-Page Intervals	Workbook Series								
	A	B	C	D	E	F	G	H	K
1	0	0	0	0	0	0	0	0	0
2	0	0	0	68	340	0	31	0	0
3	0	0	0	24	0	15	31	0	0
4	0	0	5	18	207	0	5	0	0
5	0	0	0	0	0	0	10	0	3
6	0	31	0	0	151	11	0	0	3
7	0	0	0	69	0	0	3	0	6
8	0	0	4	8	100	0	0	0	0
9	0	0	0	0	0	0	3	0	0
10	0	0*	0*	20	5	0	0	0*	0
11	0			0	38	0	0*		0
12	0			0	0	0			0*
13	0			28	0*	0			
14	0			6		0			
15	0*			0		0			
16				21*		0			
17						0			
18						0*			
Total	0	31	9	262	841	26	83	0	12

*End of series.

Table XI shows that Series E was very outstanding in the number of estimations of examples which were expressed in dollars and cents. This series offered over half as many estimations in examples expressed in dollars and cents as in the abstract form. Since Series A and H contained no examples expressed in monetary units, the variation among the different series is apparent.

It is difficult to get the correct number of estimations for examples in long division as found in verbal problems. Consider the following problem: If candy sells for 48c a pound, find the cost of 10 ounces. It is readily seen that this problem may require dividing 48 by 16. On the other hand, one may find $\frac{5}{8}$ of 48. In the latter case it is not nec-

essary to divide by a two-figure divisor. For all problems in which it was possible but yet not necessary to use a two-figure divisor, it was assumed that a two-figure divisor would be used. The number of estimations for division examples as given in verbal problems is found in Table XII.

TABLE XII

DISTRIBUTION IN 50-PAGE INTERVALS IN THE DIFFERENT WORKBOOKS FOR TWO-FIGURE DIVISORS AS FOUND IN VERBAL PROBLEMS

50-Page Intervals	Workbook Series								
	A	B	C	D	E	F	G	H	K
1	0	0	4	0	0	0	0	0	0
2	0	36	5	56	0	5	23	39	12
3	18	100	1	45	1	17	14	0	17
4	17	74	23	17	0	37	12	14	9
5	11	0	11	11	4	22	8	0	10
6	14	5	12	4	0	44	3	3	1
7	14	33	19	3	0	25	12	0	19
8	29	19	12	15	0	26	0	8	12
9	33	7	8	0	7	17	13	0	6
10	15	16*	3*	2	0	51	5	0*	3
11	12			8	6	27	0*		0
12	16			0	0	10			5*
13	18			0	3*	34			
14	15			12		6			
15	2*			0		7			
16				0*		11			
17						2			
18						14*			
Total	214	290	98	173	21	355	90	64	94

*End of series.

The greatest amount of variation in the number of estimations between any two series for verbal problems was found in Series E and F. The latter series contained about seventeen times as many estimations as the former. The distributions of the problems in Series A and F were very commendable.

It is not possible to get the correct number of estimations in division when the quotient is to be expressed as a decimal because the number of places the result is to be carried cannot always be determined. If an author stated that the examples in a given exercise were to be carried to three places, the necessary estimations were counted to have the quotient expressed in thousandths. When no instructions were given concerning the number of places, enough zeros were annexed to the dividend to express the quotient to tenths. If the dividend contained enough significant figures to have the quotient expressed to more than tenths,

each estimation in the latter case was considered. In the example $.017\overline{)\ 25.6}$, five estimations are necessary to express the quotient to tenths; in the example $23\overline{)\ 41.583}$, there are four estimations and the quotient is expressed in thousandths. In this study all estimations of the types illustrated were tabulated. Frequently, the different series contained exercises in which the quotient figures were given but the decimal point was lacking. Exercises of this type were excluded from this investigation. The number of estimations for two-figure divisors found in decimals are given in Table XIII.

TABLE XIII

DISTRIBUTION IN 50-PAGE INTERVALS IN THE DIFFERENT WORKBOOKS FOR TWO-FIGURE DIVISORS AS FOUND IN DECIMALS

50-Page Intervals	Workbook Series								
	A	B	C	D	E	F	G	H	K
1	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0
4	0	33	10	0	0	0	35	0	0
5	0	21	55	0	158	0	0	0	15
6	16	41	49	0	0	0	72	30	65
7	27	22	7	0	112	0	21	0	164
8	132	0	19	134	43	0	3	27	0
9	38	43	14	49	30	155	24	0	121
10	44	45*	0*	414	39	60	0	0*	0
11	13			62	54	30	9*		215
12	38			0	0	62			0*
13	15			558	0*	53			
14	49			25		13			
15	16*			0		50			
16				516*		4			
17						65			
18						37*			
Total	388	205	154	1738	436	529	164	57	580

*End of series.

Series H provided few estimations in decimals compared with the other series. Series D contained almost thirty-one times as many estimations as Series H. Series A contained the median number of estimations in decimals for the entire group of workbooks, yet this series had almost seven times as many estimations as Series H.

The number of estimations for two-figure divisors found in percent are given in Table XIV.

It is rather unusual to find a workbook series in arithmetic for all of the elementary grades that contains no examples in percent which re-

TABLE XIV

DISTRIBUTION IN 50-PAGE INTERVALS IN THE DIFFERENT WORKBOOKS FOR TWO-FIGURE DIVISORS AS FOUND IN PERCENT

50-Page Intervals	Workbook Series								
	A	B	C	D	E	F	G	H	K
1	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0
6	0	0	5	0	0	0	41	0	0
7	4	11	9	0	18	0	29	0	29
8	4	8	25	0	8	0	4	0	0
9	102	6	7	18	6	0	8	0	70
10	63	6*	0*	30	6	59	24	0*	0
11	75			27	8	10	0*		0
12	35			0	0	41			71*
13	14			84	4*	10			
14	11			66		6			
15	16*			0		18			
16				151*		14			
17						9			
18						0*			
Total	324	31	46	376	50	167	106	0	170

*End of series.

TABLE XV

DISTRIBUTION IN 50-PAGE INTERVALS IN THE DIFFERENT WORKBOOKS OF TOTAL NUMBER OF ESTIMATIONS FOR TWO-FIGURE DIVISOR AS FOUND IN ABSTRACT EXAMPLES, DOLLARS AND CENTS, VERBAL PROBLEMS, DECIMALS, AND PERCENT

50-Page Intervals	Workbook Series								
	A	B	C	D	E	F	G	H	K
1	0	0	43	0	0	0	16	320	0
2	0	981	347	369	682	190	344	249	768
3	522	282	407	191	137	247	204	0	530
4	248	269	83	1313	450	200	69	149	120
5	95	89	343	11	320	42	45	0	138
6	62	153	66	22	403	98	126	145	84
7	53	66	121	664	130	135	85	0	320
8	224	40	65	184	477	37	9	162	39
9	210	172	119	319	43	208	85	0	206
10	124	86*	3*	514	179	182	29	81*	76
11	116			133	138	137	20*		233
12	108			0	0	138			76*
13	111			985	18*	106			
14	88			127		33			
15	46*			18		130			
16				961*		47			
17						82			
18						66*			
Total	2007	2138	1597	5811	2977	2078	1032	1106	2590

*End of series.

quire division by a two-figure divisor. Table XIV shows that Series H is representative of the type just described.

The total number of estimations for a two-figure divisor to be found in a series is the sum of the estimations given in abstract examples, dollars and cents, verbal problems, decimals, and percent. The total number of estimations for each series is given in Table XV.

The reader has found that in each of the five different topics considered there was a lack of uniformity among the series. Naturally in a summary table there will be much variation in the number of estimations. Series D contained over five and one-half times as many estimations as Series G. There are five series that contained over twice as many estimations as Series G and the sixth (Series A) contained almost twice as many estimations as Series G. Series A, B, and F showed a marked degree of uniformity in the total number of estimations provided for two-figure divisors. If Series G and H offer an adequate number of estimations for a pupil to learn division, there is a most serious amount of overlearning which results from an indiscriminate use of the other series.

SUMMARY AND RECOMMENDATIONS

This study was made to determine the amount of variation found in the division examples given in the arithmetic workbook series which had a separate booklet for each grade from the third to the eighth, inclusive. Nine workbook series were analyzed in this study. Each estimation for all abstract division examples having a significant two-figure divisor in the different series was catalogued according to a classification outlined in a former article by the writer. The classification of estimations is dependent upon the method used for finding the quotient figure. In this study the authors of three of the nine series recommended the apparent method should be used for estimating the quotient. In one series the increase-by-one method was recommended. In the other five series, no suggestion was made by the authors as to which method to use.

The tables in this study showed that there was much variation in the number of estimations for each classification of the estimated quotient figure. To a large extent, the amount and the type of practice in long division which a pupil will receive from one of these workbooks depends upon the series which he uses.

For the five series in which no method was recommended, each estimation in abstract examples was classified by the apparent method and then by the increase-by-one method. The results from these classifications showed that for two of the series it was better to use the apparent method and for two other series, the increase-by-one method proved to be superior. For the fifth series in which no method was stated, it did not make much difference which method was used. Since the method used for finding the quotient does have a bearing in most cases on the accuracy of the estimated figure, a particular method should be stated by the author of the series. Hence, the writer recommends that the author of a workbook series should specify which method is to be used for estimation of the quotient.

Another recommendation which seems justifiable pertains to the provision which a notebook series makes for individual differences. It is commonplace in educational literature to suggest that provision be made for individual differences. However, the writer found that only Series B and D made definite provisions for these differences. Series D had a much more definite proposal for provision of individual differences than Series B. In Series D there were 3242 estimations given in abstract examples, but 2347 of these were found in remedial exercises at the end of the booklet. Thus, if a pupil needs practice in finding the quotient figure when the true quotient is two less than the estimated figure, he is referred to a particular remedial exercise which is composed of estimations of that type. A specific type of deficiency in the learning of long division may be supplied by using a practice workbook constructed in this manner. Hence, if a pupil knows how to find the true quotient for any type of estimation, he is not subjected to excessive computation of exercises in long division when the exercises are graded according to a specified type of difficulty in each example. A workbook constructed in such a manner that remedial exercise may be used for correcting a specific deficiency in long division seems better adapted for instructional purposes than a workbook which merely provides practice in indiscriminate estimation of the quotient. Hence, the writer recommends that each arithmetic workbook for a particular grade should make provision for individual differences by supplying remedial exercises classified according to the difficulties encountered in long division.

In conclusion the writer recognizes the limitations of a study of this type. It is impossible to know what is the ideal number of estimations

in division of a given classification to be included in a workbook. No arbitrarily defined number of estimations could be decided upon because this study did not take into consideration the actual learning by the pupil of the process of division with a two-figure divisor. The most favorable number of estimations to be included in practice exercises must be validated by experimentation. There is a pronounced need for an experimental study which will show the approximate number of estimations essential for pupil mastery of a given division difficulty. At the same time the relative merits of the two methods of estimation can be determined. When a study of the type just described is completed, more satisfactory workbooks in arithmetic can be provided.

EDITORIAL

EDUCATION AND THE CIVIC INDIVIDUAL

THE value of standardized tests for the general purpose of pupil classification and of the selection of pupils needing special attention in school instruction, is now recognized. Important as this type of measurement is, it has only paved the way for a new type of test in each subject, that is now needed to measure the success of various activities directed to broadening instruction on the level of each pupil's individual ability.

Some leaders in the newer school of philosophy, called the child activity movement, see little opportunity or value in standardized tests. It is true that our present measures of attainment are not designed to measure what seems to be an essential part of the power to organize and maintain the activities of social and civil life, but this merely argues the necessity for better tests. The children themselves can organize only those activities that are within their abilities and the criterion for success is the variety of stimulating work carried out on this level of mental power.

The relation of intelligence to the actual power to direct human life has not as yet been determined. For this reason, we are in a position like that of Galileo who saw moons revolving about planets and believed that planets revolved about the sun. Only hazy ideas as to a power in nature that maintained such performances were possible until Newton discovered the principle of inter-relation in gravity action across space and affecting all matter in direct proportion to its mass.

Our measures of intelligence have been developed to meet particular experiences or conditions and therefore have but a partial validity as measures of the central organizing activity which, in human life, takes precedence over the reactions of the bodily organism to its environment. The physician, Binet, felt the need to use in his medical practice a control over the reactions of the bodily organism which he hoped to find in the action as an organizing ability to direct human life, and which he called intelligence. To him this was a psychological function manifested in various kinds of performance. His work in developing a series of steps to show a growth in power for those performances which were

of increasing complexity has been called 'the success of a shot in the dark.'

Modern tests provide for performance in such a way as to direct the action of general intelligence to particular kinds of exercises, in all of which the common quality of intelligence activity is involved but in each exercise some other factor of mental action is also involved. These tests are validated by the Spearman method which finds three mental processes in these responses, assumed to belong to the common quality of intelligence. The three processes recognized by Spearman are: (1) a definite experience tends to be retained as knowledge, (2) the mind tends to find a relation between known experiences, and (3) the mind tends to organize from known experiences another experience corresponding to the known related experiences. From these principles, Spearman has developed formulae by the use of which the validity of each exercise of an intelligence test may be found from its relation to the total score on the test.

The mental processes recognized by Spearman are given as three principles of noegenesis without assuming that they are an inclusive definition of intelligence or that the controlling power for organizing social and civic life is limited to the mere knowing of the relations of experience. The evidences of man's struggle to advance civilization indicate an organizing power for union with others to direct the use of life and to attain performances not possible to the powers of instinct, centered as the powers of instinct are almost entirely in the processes of adaptation to an accepted environment.

Education is in need of a measure of that instruction by which the teacher directs original power of the pupils *at a given mental age* to processes of thought and action which broaden their use of knowledge so as to include appreciations, and also to include enthusiasms for the organization of knowledge and of needed skills by the use of which life is made more worthwhile. Such a measure should evaluate coöperative effort and recognize self direction in civic conduct as being a distinctive power for the organization of social performances. This is work for a new Spearman who can extend or recenter the principles of noegenesis.

G. A. B. AN OBSERVER

REVIEWS

Address all communications relative to book reviews to Editor Kai Jensen, University of Wisconsin, Madison, Wisconsin.

STODDARD, GEORGE D., AND WELLMAN, BETH L. *Child Psychology* (New York: The Macmillan Company, 1934), pp. xii + 419.

The organization of this text follows a purely topical arrangement, although the topics are not always mutually exclusive. The book is divided into four sections: (1) introduction, which surveys the field and critically evaluates the methods of study or investigation; (2) motor and mental development, which treats of the effector side of complicated responses (particularly of coördination, speed of movements, etc.) and of sensory discriminations, concepts, intelligence, learning, etc.; (3) a section dealing with social behavior, play and artistic capacity; (4) personality and adjustment, including chapters upon emotional patterns, personality aberrations, behavior aberrations, character, etc.

The authors recognize the artificiality of their separation of motor and mental, of intelligence, learning, etc., but justify the arbitrary procedure on practical grounds. Those who envisage a unified picture of development as the greatest need of present-day child psychology will deplore the authors' choice of organization.

The intra-topical organization is far superior although one may question the logic of including the plantar response in the category of sensory discriminations wherein the reference points are *receptors*, not *effectors*. Similarly, there appears little justification for bracketing Sound and Light together and subsequently giving independent rather than subsidiary status to Moving Objects and to Color. Aside from minor defects of this nature the organization, within the ultimate subtopics, follows a genetic sequence with a remarkable clarity and conciseness of expression. This, and the freedom from "padding," commends the text to all who appreciate an economical presentation of facts.

Of equal importance to organization is the choice or selection of the material which is to be included in a child psychology. This presents problems in the delimitation of psychological subject-matter, in the evaluation of the validity and reliability of the studies in the field, in the adequate reporting of important work regardless of language boundaries, and in achieving a balanced presentation of the facts of development.

Unquestionably the outstanding merit of the present work consists in the critical selection and evaluation of the studies reviewed. The authors have succinctly outlined the various methods of child psychology with the relative advantages and limitations inherent in each. They have followed this up by noting the methods employed in the studies reported, the number and age of the subjects, the statistical treatment of the data and other essential facts in the light of which the value of the conclusions may be judged.

The gravest danger in the use of such criteria of selection is that, if rigidly fol-

lowed, there will be many *lacunae* across which we must write *incognitae*, and that there will be other phases which will receive unwarranted emphasis because of the number of investigations which have been made. The authors have remarked upon the nodal stresses of research at certain developmental levels and in such aspects as intelligence. They have then, unfortunately, allowed this uneven distribution of research to generate an uneven treatment of development, wherein the quantity of researches is the determining factor rather than the relative importance, in a balanced portrayal of human ontogenesis, of the thing investigated. This is conspicuous in the chapters devoted to intelligence which, in themselves, constitute an excellent critique of particular interest to the student of education because of the analysis and evaluation of recent work tending to support the somewhat more hopeful belief that intelligence is not absolutely and irrevocably fixed by heredity; that an appreciable modification, within certain limits, may be effected by the environment.

On the other hand one must question the wisdom of omitting discussion upon pre-natal development, upon the earliest beginnings of language in the production of vowels and consonant sounds and in the association of words with objects. It is quite certain that just as reliable material upon some of these matters is available as some of the studies which have been reported by the authors. In the absence of well-controlled experiments providing statistically reliable data recourse should be had to whatever information is available with caution expressed as to its limitations and to its acceptance as a closed chapter. It should be remembered that scientific study is a continuing process, with present-day techniques arising in response to the defects revealed in preceding studies which, in turn, have had a like history. Not all phases in the study of human development have achieved the same technological stage.

It is regrettable that a work purporting, as the editor states, to weigh the "experimental data from all over the world" should have such a paucity of material from European sources. It is a serious error to restrict representation largely to Bühler and Piaget and to ignore the significant contributions of Minkowski, Bersot, Peiper and many others. In addition to the limitations in selection and organization of material there are specific items which invite criticism. An instance of such is the loose, indefinite, sometimes eclectic use of terms such as 'mental.' Thus in referring to a table of norms of development derived from the work of Gesell, Shirley, and others the authors say, "a composite view of mental behavior from one month through five years is presented" (p. 130), and later, "Here it may well be asked, what does this collection of behavior manifestations signify in terms of true mental development?" (p. 136). Elsewhere we find: "in certain ways, the nervous system transforms external patterns into adequate internal stimuli and drives whatever mental mechanism is present accordingly" (p. 178).

In the sections treating of the newborn infant there is confusion regarding the nature of motor responses. Movement of the infant, as recorded by the stabilimeter-polygraph technique in the Ohio and Iowa studies, is presented in contrast to reflexes although such movement is surely the resultant of reflex activity (whether elicited by external or internal stimuli) reduced to bi-dimensional stabilimeter oscillations varying in magnitude and temporal relations. Hence the na-

ture of the response of configurations is of importance in determining the magnitude of the movement or activity discussed by the authors. They have likewise tended to imply that movement is to be set apart from motor response although the cited differentia refer only to differences in amount of effector involvement of the organism and to the degree of sensitivity and the presence of other limitations of the recording apparatus.

A similar confusion arises from the authors' attempt to distinguish between the effects of stimuli of short as contrasted with those of long duration, between the initial response at the onset of the stimulus and the subsequent behavior while the stimulus persists. No one denies these differences but the implications that psychology has ignored them is not justified in view of studies of adaptation. The physiologist also has long been concerned with the temporal aspects of stimulation. The error consists in holding the response to the initial onset of the stimulus to be completely generalized on the stimulus side, *i. e.*, to occur to *change* irrespective of modality while the response to continued stimulation is particularized as sensory discrimination. Since quantitative and qualitative changes occur in either case there is no sound basis for ascribing the term 'sensory discrimination' (see Warren's Dictionary) to one set of behavior changes only. To concentrate attention largely upon the continuous or long durational aspect of stimulation is to ignore the relatively greater psychological significance of more or less discontinuous stimuli in the development of human behavior.

The text does not distinguish 'concept' from 'perception' or 'percept' and therefore may lead the reader to infer that the terms are synonymous. It also neglects to report any evidence in support of the following comment upon Lange-Eichbaum's theory linking genius with insanity:

"If we accept this view we become readily reconciled to the long history of sterility in the transmission of the genius strain" (p. 149).

If one reflects upon the rôle of the verbal stereotype in social control one must be quite pessimistic regarding the authors' conclusions upon the effects of literacy. Literacy may not be primarily liberative. Perhaps it actually increases the facility of social control. Two quotations from the text illustrate the point just made. Regarding literacy we find:

"The appearance of increase in mental ability is perhaps best illustrated by the effect of public school education. The masses, throughout the school period, have increased their mental potentiality enormously and with great rapidity. Public schooling reduces illiteracy to a negligible quantity and enormously increases the vocabulary. Consideration of what words mean in the process of logical thinking makes it clear that now mental ability is being harnessed for everyone in a way formerly restricted to the élite. Ignorance of words can lead to a mental dumbness similar to low ability" (p. 181).

But elsewhere:

"In present day life, there are strong forces definitely subversive of mental development in individuals, in that they are substitutes for thinking, or distraction designed to discourage the process; also that concomitantly personality is everywhere invested with similar influences, appearing early in the life of the child" (p. 179).

In summing up the limitations of the work we may ask how nearly the text

approaches the excellent criterion of the author to the effect that "truth does not reside inherently in a mass of 'facts' (however well controlled the experiments which produced them), but in the dynamic, meaningful pattern into which these facts are validly fitted" (p. 224).

We have already called attention to the merits of this child psychology in style, in the critical appraisal of material reported, and in the special topic of 'intelligence.' We must likewise acknowledge our indebtedness to the text for throwing into relief the discrepancies in the norms of pre-school development as furnished by Gesell, Shirley and others. The authors have subjected the claims of Gestalt psychology to severe scrutiny and have discovered a tendency towards construction of an elaborate system upon a relatively scanty experimental foundation. They have also seriously challenged Piaget's conclusions regarding the ontogenetic development of human thought.

In conclusion it must be emphasized that this work is a contribution to child psychology which no worker in the field can afford to ignore. In the reviewer's opinion it easily takes its place among the three or four outstanding texts in the field.

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SHERMAN, MANDEL. *Mental Hygiene and Education* (New York: Longmans, Green and Company, 1934), pp. xi + 295.

Successful hygiene in any field must depend upon the accuracy and amount of knowledge of etiology. In the field of growth behavior problems and abnormalities, knowledge of etiology has in recent years far outstripped the production of manuals which wisely condense and apply the knowledge available. Consequently this book of Sherman's, which was evidently designed to make available for hygienic purposes some of these advances in knowledge, is peculiarly welcome and should be of large service. It is admittedly designed for the college level of readers and is written in a style that will doubtless make it of use only at that level or above. The topics treated are familiar to all interested in the field: factors of personality, Jung, Kretschmer, Adler, Freud, timidity, attitudes, negativism, conflicts, temper tantrums, compensatory behavior, and so on through many more. The author is obviously familiar with his material and with a wide range of literature; but this very familiarity makes the reviewer wonder if at times the student may not find it difficult or apparently insufficient. In the hands of a teacher who is quite as familiar, or nearly so, with the literature as is the author, the book should work well; but the reviewer fears that teachers less well trained might find the presentation and proper amplification of some of it rather hard going.

The book is written with a most evident bias for psychogenic interpretations. It is said for example that "symptoms of the neurotic child develop on a psychogenic basis." The chapter on mental diseases in adolescence might easily give the impression that such diseases were entirely psychogenic in nature. Many highly competent psychopathologists would not be willing to accept this point of view, or would think it a questionable plan to instruct students in one point of view only. Perhaps this preference for psychogenic interpretation will explain some of what appear to the reviewer to be quite incomplete analyses. Temper tantrums are presented without mention of the possibility of epilepsy or epileptic equivalents, nor is constitutional

psychopathy mentioned in that connection. Causes of elation are also presented in a similarly incomplete manner.

The reviewer knows very well that arbitrary choices must often be made in the selection of material for a book. For lack of space one must often omit material known to be highly valuable and topics that might be most useful. But the reviewer here does wonder what could be the reason for presenting speech disturbances without a mention of the brilliant work of Travis and his associates, for presenting extroversion-introversion problems in childhood without mention of Marston's work, and for omitting the problem of jealousy completely.

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NIMKOFF, MEYER F. *The Child* (Chicago: J. D. Lippincott Company, 1934), pp. ix + 303.

A dozen or more excellent introductory books on child study have appeared during the last five years. All were written by competent authorities. All were based on recent research. Yet there is none which covers exactly the same ground as this volume by Nimkoff. For this is the only recent volume known to the reviewer which maintains a nice balance between the psychological and social points of view.

The bulk of the volume is made up of two sections of roughly equal length, headed respectively *Child Development* and *Social Experience*. The first of these deals with heredity and with physical, mental, emotional, and social development. The other is concerned with the sociology of child life as manifested in the family, at school, and at work or in the child's play and in his aesthetic and religious experience. The emphasis is thus divided between the child as an individual and the child as a member of the social group.

The book brings forward little or no original material. It cannot be considered as a contribution to knowledge. It is, however, a sane and well documented introduction to child study which can be recommended with confidence to the lay inquirer.

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RESEARCH ABSTRACTS and BIBLIOGRAPHIES

Address all communications relative to research abstracts and bibliographies to A. S. Barr, University of Wisconsin, Madison, Wisconsin.

BULLETINS

CHAMBERLAIN, LEO M. *A Salary Study for the Lexington Public Schools* (Lexington, Kentucky: University of Kentucky, 1935), pp. 61.

This bulletin contains material on the status of teacher's salaries in the Lexington Public Schools, factors involved in salary scheduling, a proposed salary schedule, and the cost of the proposed schedule.

CHAPIN, F. STUART. *The Measurement of Social Status: by the Use of the Social Status Scale*, 1933 (Minneapolis: University of Minnesota, 1933), pp. 16.

The author presents in this bulletin the results of six years of experimentation with the Living Room Scale and the Social Status Scale of 1933.

FLANAGAN, JOHN C. *Factor Analysis in the Study of Personality* (Stanford University, 1935), pp. 103.

This monograph contains materials as follows: The problem of the description of the individual, a brief survey of available factor analysis technique, the analysis of three sets of data by Hotelling's method, a technique for obtaining uncorrelated test scores, including its application to a specific example, conclusions and recommendations. Bibliography.

GORHAM, DONALD R. *A Study of the Status of Weekday Church Schools in the United States* (Philadelphia: University of Pennsylvania, 1934), pp. 96.

This monograph contains a discussion of the historical background of weekday schools, the growth and extent of weekday church schools, current administrative practices, the teaching and supervisory personnel, the curriculum of weekday church schools, with conclusions and recommendations. Bibliography.

GRUBER, FREDERICK CHARLES. *A Concept of Poetry: A Critical Analysis as a Basis for Educational Experience* (Philadelphia: University of Pennsylvania, 1934), pp. 156.

This monograph contains a statement of the problem, the meanings of poetry, poetry from the standpoint of the poet, poetry from the standpoint of subject matter, poetry from the standpoint of method by which poetic effects are attained, rhythm, similar sounds, similarity through suggestion, intensity, and conclusions. Bibliography.

IRWIN, ORVIS C., AND OTHERS. *Studies in Infant Behavior* (Iowa City, Iowa: University of Iowa, 1934), pp. 174.

This monograph contains the report of five researchers: Differential variations in the amount of activity of newborn infants under continuous light and sound stimulation, by LaBerta A. Weiss; The Effect of the Factors of Duration, Intensity, and Pitch of Sound Stimuli on the Responses of Newborn Infants, by

Esther M. Stubbs; Differential Variations in the Activity and Crying of the Newborn Infant under Different Intensities of Light: A comparison of observational with polygraph findings, by Orvis C. Irwin and LaBerta A. Weiss; The Effect of Clothing on the General and Vocal Activity of the Newborn Infant, by Orvis C. Irwin and LaBerta A. Weiss; and the Effect of Darkness on the Activity of Newborn Infants, by Orvis C. Irwin and LaBerta A. Weiss.

KELLY, FRED J., AND RATCLIFFE, ELLA B. *Privately Controlled Higher Education in the United States* (Washington: United States Bulletin, 1934), pp. 56.

This bulletin contains material on the church and the early educational development, the church and state in the control of the colonial colleges, current status of higher education under Protestant auspices, education under the Roman Catholic church, and higher education under private auspices.

PETERS, CHARLES C. *Abstracts of Studies in Education at the Pennsylvania State College, Part V (1935)* (State College, Pennsylvania: Pennsylvania State College, 1935), pp. 55.

This is the fifth volume of abstracts of Pennsylvania State College studies in Education, lithoprinted in miniature. This bulletin contains reports of twenty-six studies.

ROUSE, MICHAEL FRANCIS. *A Study of the Development of Negro Education Under Catholic Auspices in Maryland and the District of Columbia* (Baltimore: Johns Hopkins University, 1935), pp. 125.

This monograph contains a statement of the problem and a discussion of the early distribution of Catholic negroes in Maryland, the slave as the recipient of Catholic teaching, first attempts at school organization, the period of organization, Episcopal interest and the revival of school work, the second Plenary Council on negro education, new groups taking up the work, new agencies and their effects, outside influences and internal growth, the completion of a hundred years of Catholic negro education, the Josephites, summary. Bibliography.

SMITH, HENRY LESTER, AND NOFFSINGER, FOREST RUBY. *Bibliography of School Buildings, Grounds, and Equipment Part IV* (Bloomington, Indiana: Indiana University, 1935), pp. 216.

This bulletin offers an extension of earlier bibliographies published in this field by the Bureau of Coöperative Research, School of Education, Indiana University, including references from April, 1932, to October, 1934.

WAGONER, LOVISA C., AND OTHERS. *Observation of Young Children* (New York: McGraw-Hill Book Co., 1935), 297 pages.

This monograph contains a statement of the aims of the nursery school, the work of the nursery school and observation outlines for nursery school equipment, activity, attitudes and personality, language, judgment, imagination, emotional development, adult-child relationship's, special problems, etc., and Bibliography.

EDUCATIONAL ADMINISTRATION AND SUPERVISION

ELIASSEN, R. H., AND ANDERSON, EARL W. "Investigations of the Teacher Supply and Demand Reported in 1934," *Educational Research Bulletin*, XIV (March 13, 1935), pp. 61-66.

The authors present a summarization of the investigations relating to teacher supply and demand for the year 1934. Bibliography.

GATTO, FRANK M. "Supervision Through Demonstration Lessons," *Pittsburgh Schools*, IX (January-February, 1935), pp. 74-94.

The author presents detailed analysis of the benefits derived from demonstration lessons to demonstration teachers, teachers and principals.

HEWES, AMY. "Why Pupils Leave High School," *The High School Review*, XLIII (April, 1935), pp. 287-294.

From a study of 138 pupils from grades X, XI, and XII, the author found the reasons most frequently given, in order of frequency for withdrawing from school as follows: (1) finances, (2) Lack of interest, and (3) transfers.

HUMPHREYS, PHILA. "A Supervisory Program in Written Expression," *The Elementary School Journal*, XXXV (March, 1935), pp. 505-510.

The author describes a program for the improvement of written expression carried out in grades 3-6, in the Elmhurst, Illinois public schools.

SARABAUGH, MARY E. "Repeating Courses on the High School Level," *Educational Administration and Supervision*, XXI (February, 1935) pp. 115-120.

The author presents data upon the repetition of courses revealed in the records of 619 students enrolled in the Arts college of the University of Buffalo concluding that repeaters, except to raise one's grade, do not do as well in college as non repeaters and the original grade rather than repeat grade should be employed in predicting academic success.

SHELDON, JAMES. "Pupil Participation in School Control in High Schools of Iowa," *The School Review*, XLIII (March, 1935), pp. 189-197.

From a study of High School and College students enrolled in classes at Stevens College. The author concludes that there is no justification for the arbitrary line of demarcation between Senior high school and Junior college students.

EDUCATIONAL ADMINISTRATION AND SUPERVISION

SHUTTLEWORTH, FRANK K. "The Dollar and Real Incomes of Public School Teachers and of Wage Workers, 1889-1890 to 1934-1935," *Educational Administration and Supervision*, XXI (February, 1935), pp. 81-96.

The author presents a critical study of the income of teachers in 1889-1890 and 1934-35 and concludes that teachers and educators must devote more energy and ingenuity to discovering the most competent sources of information and that the range between changes in the cost of living and changes in dollar incomes be shortened.

WARREN, DOROTHY E. "Knowledge of Simple Business Practices Possessed by Intermediate-Grade Pupils," *The Elementary School Journal*, XXXV (March, 1935), pp. 511-516.

The author presents data on the effect of moving on the educational status of children wherein he finds that the transient children in grades 7 and 8 in the Canal Zone excels in all subjects measured except arithmetic computation.

METHODS OF LEARNING AND TEACHING

FRANK, HELENE. "A Comparative Study of Children Who are Backward in Reading and Beginners in the Infant School," *The British Journal of Educational Psychology*, V (February, 1935), pp. 41-58.

The author presents a detailed analysis of the types of errors made by backward children in reading from which she concludes that the fundamental difficulty is that of immature perception.

FRANK, JEROME D. "The Influence of the Level of Performance in One Task on the Level of Aspiration in Another," *Journal of Experimental Psychology*, XVIII (April, 1935), pp. 159-171.

From an experimental study of five tasks the author concludes that changes in the level of performance in one task affects the height of aspiration in another.

LORGE, IRVING, AND THORNDIKE, EDWARD L. "The Influence of Delay in the After-Effect of a Connection," *Journal of Experimental Psychology*, XVIII (April, 1935), pp. 186-194.

From an experimental study of 48 subjects who tossed balls back over their heads 40,000 times at an unseen target the authors conclude that the experiment supports the view that there is no learning without confirming reaction and that improvement in this particular activity may be made when announcements follow the connection with no intervening throw with a delay up to 6 seconds.

SALISBURY, RACHEL. "Integration and Transfer in the Junior High School," *The Clearing House*, IX (March, 1935), pp. 423-427.

From an experimental study of the transfer of training in a specific study habit, such as outlining the author offers evidence that the habit transfers to reading, reasoning, and achievement in a content subject.

CURRICULUM

FRUTCHEY, F. P. "Measuring Motion-Picture Preferences," *Educational Research Bulletin*, XIV (March 13, 1935), pp. 67-74.

The author presents a discussion of two methods of measuring motion picture preferences: the rating scale and the method of paired comparisons.

WRIGHTSTONE, J. WAYNE. "Comparison of Varied Curricular Practices in Mathematics," *School Science and Mathematics*, XXXV (April, 1935), pp. 377-381.

From a study of pupils of equal intelligence the author concludes that the new type practices in the field of mathematics are on the whole as effective as the standard type practices in this field.

CHILD WELFARE AND GUIDANCE

CUNNINGHAM, S. DONALD. "The Vocational Plans of a Select Group of High-School Seniors," *The School Review*, XLIII (April, 1935), pp. 281-286.

The author presents a survey of the Vocational plans of 108 boys and 109 girls from Jefferson County, Ohio; the first choice for the boys was engineering and for the girls teaching and nursing.

MEASUREMENTS, STATISTICS, AND SCIENTIFIC TECHNIQUES

DAVIS, ROBERT A., AND BARROW, EDWIN L. "A Critical Study of the Questionnaire in Education," *Educational*

Administration and Supervision, XXI (February, 1935), pp. 137-144.

The authors present a study of the validity and reliability of the questionnaire in education.

DOLL, EDGAR A. "The Vineland Social Maturity Scale," *The Training School Bulletin*, XXXII (March, 1935), pp. 1-7.

The author presents a description of the Vineland Social Maturity Scale with the copy of the scale itself.

EDMISTON, R. W. "Testing Generalizing Ability," *Peabody Journal of Education*, XII (March, 1935), pp. 246-251.

From an experimental study of the generalizing ability of college students, the author concludes that generalizing ability can be greatly improved by training and that the ability to generalize is no more dependent upon intelligence as measured by group intelligence tests than are other features of education.

LONGSTREET, R. J. "An Experiment with the Thurstone Attitude Scales," *The School Review*, XLIII (March, 1935), pp. 202-208.

After reviewing previous investigations the author presents the results of an experimental study with the Thurstone Attitude scale carried on in four Volusia County, Florida high schools. From this investigation, he concludes that the theory receives little support, that, even if facts are forgotten, values in the form of attitudes remain to justify social-science courses.

WILLOUGHBY, RAYMOND ROYCE. "The Concept of Reliability," *Psychological Review*, XLII (March, 1935), pp. 153-165.

The author presents a critical examination for the concept of reliability concluding that the preferred techniques for securing increased reliability is not that of blindly lengthening the test but that of selecting items maximally correlated.

WRIGHTSTONE, J. WAYNE. "Correlations Among Tests of High-School Subjects," *The School Review*, XLIII (March, 1935), pp. 198-201.

The author presents the intercorrelations for a number of achievement tests and intelligence and achievement. The correlations between Intelligence and achievement average about .45. The intercorrelations for achievement test somewhat high.

NEW TESTS

CRAM, FRED D., AND GREENE, H. A. *Iowa Grammar Information Test for Junior and Senior High Schools.* Iowa City, Iowa: University of Iowa, Bureau of Educational Research and Service, 1935.

A multiple-choice test of the range of information in English grammar, there are 80 exercises.

GATES, ARTHUR I. *Gates Primary Reading Test.* New York: Bureau of Publications, Teachers College, Columbia University, 1935.

This test contains measures of three aspects of reading Type 1, Word Recognition; Type 2, Sentence Reading; and Type 3, Paragraph Reading for grades 1 and 2.

GATES, ARTHUR I. *Gates Silent Reading Test.* New York: Bureau of Publications, Teachers College, Columbia University, 1935.

This test contains measures of four aspects of reading for grades 3 to 8:

Type A, Reading to Appreciate General Significance; Type B, Reading to Predict the Outcome of Given Events; Type C, Reading to Understand Precise Directions; and Type D, Reading to Note Details.

RINSLAND, HENRY D., AND BECK, ROLAND L. *Rinsland-Beck Natural Tests of English Usage.* Bloomington, Illinois: Public School Publishing Company, 1935.

Three tests as follows: Test I, Mechanics, covering capitalization, apostrophe, and punctuation; Test II, Grammar, covering adjectives, adverbs, verbs, pronouns, prepositions, and conjunctions; and Test III, Rhetoric, covering sentences with meanings not clear, paragraphing, sentence structure, and careless omissions and repetitions.

TIEGS, ERNEST W., AND CLARK, WILLIS W. *Progressive Achievement Tests.* Hollywood, California: Southern California School Book Depository, Ltd., 1935.

A group of diagnostic test batteries, including reading, vocabulary, reading comprehension, arithmetic reasoning, arithmetic fundamentals, and language, as follows: Primary Battery, Forms A and B for grades 1 to 3; Elementary Battery, Forms A and B, for Grades 4 to 6; Intermediate Battery for grades 7 to 9; and Advance Battery for High school and College.

TRAXLER, ARTHUR E. *Traxler Silent Reading Test for Grades 7 to 12, Forms 1 and 2.* Bloomington, Illinois: Public School Publishing Company, 1935.

This test measures four fundamental phases of reading (1) the test of rate of reading; (2) story comprehension; (3) word meaning; and (4) power of comprehension.

STEPHENS, J. M. *The Influence of the School on the Individual.* Ann Arbor, Michigan: Edwards Brothers, Inc., 1933, pp. 106.

This monograph contains a statement of the problem, data concerning educational achievement, the interpretation of the data, the means by which the school influences the individual, with a summary of conclusions.

RESEARCH NEWS and COMMUNICATIONS

Address all research news and communications to Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

Projected Research on a Coöperative or Coördinated Basis.—One way in which the editors hope to extend the usefulness of the *Journal*, through the Department of Research News as a medium, is to make available outlines of suggested investigations which can be worked out coöperatively by interested persons. These columns are available not only for the initial outlines of such projects, but for later discussion of investigational procedure, progress reports, and publication of findings.

This movement toward integration of the efforts of educational investigators is significant for all who participate in, direct, or apply the results of research. Illustrations of the results of coördinated effort are found in many of the studies reported in the Department of Research News during the past few years. The *Journal* has published symposia on the classification of educational research (May and June, 1931) and on the effects of measurement on instruction (March, 1935).

Three requirements for coöperative investigation have been named: (1) a well-selected committee to define major issues in the field of investigation, to suggest methods of investigation, and to review findings previous to publication; (2) a personnel to conduct the investigation sponsored by the committee; and (3) some provision for travel expense.[1]

"Provided with these essentials, group research bears fruit. It avoids some of the weaknesses which frequently characterize individual effort. The topics of investigation are likely to be well chosen, and bias in the interpretation of results is reduced. The best methods of investigation are likely to be employed. Most important of all, a group of people with prestige are familiar with the findings of the study which, therefore, is far more likely to get over into practice. It is at this point that many individual investigations fail. Every time one prepares a comprehensive bibliography he is struck by the number of significant researches already in existence which have received little or no attention as far as modified school practice is concerned."

Four types of coöperating groups have been proposed, rather than to depend so largely as in the past on the individualistic type of research: (1) intra-institutional groups in which tasks are assigned by administrative officials with little or no consideration for the wishes of individuals; (2) intra-institutional groups in which tasks are chosen by the group concerned in accordance with the principle of the majority rule; (3) inter-institutional groups in which the tasks are assigned by administrative officials, committees, etc.; and (4) inter-institutional research conducted by self-initiated groups of individuals of like interests.[2]

[1]Norton, J. K. "Coöperative and Individual Research," *Journal of Educational Research*, XVII (March, 1928), pp. 216-18.

[2]Barr, A. S. "Coöperative Research," *Journal of Educational Research*, XXVIII (January, 1935), pp. 362-64.

"While each of these methods of securing group activity doubtless has its own peculiar values, depending upon the nature of the problem, and the competency and the attitude of the individuals concerned, the writer should like to dwell more particularly upon the merits of the latter. The real advantages of this type of coöperation are: (1) it arises out of each individual's own felt needs, difficulties, and interests; the advantage of having individuals work at research that they think important is tremendous; (2) it is for the most part independent of financial considerations. Far too many persons appear to have the idea that research depends upon money. While money is always a convenience, the essential element in any piece of research is the thinking, and when money is employed to remove an otherwise intelligent and competent research worker from immediate contact with his data, the stimulation and the constant checking and rechecking afforded by these data are removed. In the main, the extensive use of the so-called statistical clerk is based upon a misconception of the nature of research. And (3), this type of coöperation is independent of committee appointments and political preferences. Out of the confusion that exists between political and intellectual leadership many persons otherwise competent to do research are heard to attribute their inactivity to failure to secure official preferment. Again, the writer would like to say that, aside from the personal gratification which always arises from these official preferences, they in no way enhance the individual's ability to do research. The type of coöperation here urged is free and unlimited except by the capacity, initiative, and leadership of those who undertake it."

Specific suggestions concerning how graduate theses may involve a unified pattern or be parts of a larger planned program of research end as follows:[3]

"Here, then, is the line of development which the administration of educational research in America will probably find it wise to follow. It will diligently avoid any semblence of imposition of a topic from above as well as the tendency to follow too literally the personal preferences of the individual student by merely regulating his fancies when they become too unrealistic. In place of these obsolescent devices, it will move to substitute a system of group or coöperative planning of an extended research program wherein the work of each member falls into its prescribed niche. Continuity rather than discreteness will be its watchword. So far our educational activities have been hit-or-miss shotgun forays into the territory of the unknown; henceforth, we must have mass invasions moving toward the deliberately arranged conquest of key positions."

Another worker criticizes the poor contacts which thesis advisers experience with the schools studied in educational research, and the resultant ill effects on the theses and the progress of the science of education. He submits a plan of research organization which unites the skill of the technical investigator and the need or desire for more definite knowledge as felt by teachers. A new officer, the Coördinator of Research, is to be placed in the school system, with these duties:[4]

1. To make himself known in the area.

[3]Hartmann, G. W. "Laissez Faire Versus Planning in Educational Research," *School and Society*, XXXIX (May 12, 1934), pp. 600-603.

[4]Durost, W. N. "The Missing Link in Educational Research," *Progressive Education*, XII (January, 1935), pp. 35-38.

2. To familiarize himself with research needs in the area.

3. To assay the caliber of graduate students doing research in the institution with which he is connected.

4. To bring into contact the research opportunities and the properly qualified students.

The preceding discussion has been concerned in the main with pointing out the merits of coöperative or coördinated investigation. It is not to be assumed from such statements that there is no longer any place for the individual or pioneer type of research, but rather, that a proper balance between individual initiative and large-scale planning should be established in research. Two extremes in educational investigation are represented in the largely individualistic research of America and in the current cooperative plan of Australia. In Australia, where educational research is rather new, it is proposed to develop a planned program which will coördinate the work of the various individuals and direct it toward goals set up by the educational authorities with the help of leaders in the field.[8]

"Both the American and Australian plans have their advantages as well as disadvantages. One need but survey the wide variety of research that has been undertaken in this country to appreciate that the independent worker has made large contributions to the body of available scientific information dealing with educational problems. In many fields there have been highly important findings that have been incorporated into our educational practices. The independent worker has felt free to explore leads of interest to himself. It must be admitted that some of these studies have not appeared to be immediately pertinent; however, one must admit that this may be because of our inability to see the possible relationships rather than the lack of value of the findings.

"A combination of the American and Australian plans seems highly desirable. On the one hand, one would want to do nothing to crush the fine spirit of independent individual research which has resulted in the development of an ever-growing body of educational truth. On the other hand, there is every reason to believe that a planned program of coöperative research dealing with crucial issues in present day education would be most helpful. This end might well be accomplished through the coördinated action of the various scientific bodies, both state and national, dealing with aspects of educational problems. The accomplishment of such an end demands real educational statesmanship. Unless this is done the alternative may be the establishment of some central authority which might arbitrarily take upon itself the setting up of standards and criteria for evaluation."

When the educational history of the first half of the twentieth century is written, the third decade of this period will be credited with the initiation of a program of coördination or coöperation in educational research. This type of coördinated investigation and publication should break down excessive academic isolation in research, prevent wasteful and unnecessary duplication of effort, and make readily available and applicable the results of major scientific studies to field workers. It seems entirely reasonable to expect within the next decade in each of the subject-matter fields a survey similar in scope to the Modern Foreign Language Study and a summary of the avail-

[8] Brueckner, L. J. "Planned Programs of Research." *Journal of Educational Research*, XXVI (January, 1933), pp. 364-66.

able factual studies similar in comprehensiveness to that of Gray in reading. Whatever the future may hold, however, in the development of coördinated large-scale research, there is encouragement for the present in the progress here reported. The obligation of the field worker is to keep informed concerning important studies in progress, to coöperate wherever possible, and to use the findings reported in the improvement of teaching, curricular, or administrative procedures.[6]

Research News, 1930-35.—At intervals it is desirable in any coöperative undertaking, such as the present department, to take stock of the type of service attempted and rendered, as well as to consider profitable extensions of past and present activities. During the past five years these columns have emphasized especially research news items concerned with:

1. Analyses or tabulations of the frequency with which various subdivisions of education have been investigated, revealing centers of interest and other areas in a relative state of neglect.

2. Summaries and critiques of completed research or of advances due to investigational effort, especially large-scale coöperative or coördinated projects.

3. Analyses of educational trends and predictions of future developments.

4. Statements of research under way, in particular the annual list of Doctors' theses in progress, published in the January number of the *Journal.*

5. Outlines and statements of needed investigations, especially those which can be worked out coöperatively. This type of service can and should be greatly extended.

6. Discussions and references concerning research methodology and procedure, in particular the annual bibliography published in the September number of the *Journal.*

7. Programs and agencies for the training and supervision of graduate students and research workers, especially innovations in the curriculum, and the work of foundations, of professional and learned organizations, and of research bureaus and departments in the promotion and direction of educational investigation.

More specifically the news items have dealt with such topics as the following:

1. Guides to educational literature (general, periodicals, books and monographs, and graduate theses), bibliographies, and summaries.

2. New periodicals and changes in policy.

3. New monograph and research series.

4. Investigational activities and publications of professional and learned organizations (national, regional, state, and local).

5. Work of international and national boards and foundations in the financing, stimulation, direction, and publication of research.

6. Work and publications of such agencies as the Research Division of the N. E. A. and of the U. S. Office of Education.

7. Graduate training programs, research organizations, studies, and theses in higher institutions.

8. Publications, investigational activities, and research agencies of state and city school systems (school surveys, testing programs, courses of study, annual reports, and organization of research bureaus and departments).

9. Major school surveys and other in-

[6] Good, Carter V. "Coördination of Educational Research," *Journal of Educational Research,* XXV (January, 1932), pp. 44-45.

vestigations of large scope and general interest.

10. Testing programs.

11. Curriculum studies, courses of study.

12. School experiments.

13. Administrative plans.

14. Yearbooks of professional and learned groups.

15. Biographical and educational directories.

16. Symposia on educational problems.

17. Research committees.

18. Meetings of research and professional groups.

It is the hope of the editors that readers of these columns will coöperate even more fully than in the past in securing appropriate research news items, especially from classroom teachers, supervisors, administrators, and other field workers.

Relation of the Curriculum to Maturity.—Carleton Washburne of Winnetka, Illinois, is interested in discovering investigations of the relation of the curriculum to maturity as an aid in outlining a proposed yearbook on this subject. Illustrations of the type of study with which he is concerned are those of: stage of mental growth and arithmetic readiness necessary for each topic involved, reading readiness, eye readiness for reading, the grade in which the various elements of punctuation can be satisfactorily taught, and various child-development investigations.

Research in Australia.—Two departments of education in Australia, Tasmania and New South Wales, have recognized the importance of investigational work by formally appointed officers who will devote their time to research and to supervision of classes of an experimental or special character. Early in 1935 the Council distributed reports on Australian libraries and on *The Education of the Adolescent in Australia.* An earlier volume, *The Primary School Curricula in Australia,* has already become a standard work for reference purposes.

Accredited Secondary Schools and Higher Institutions.—Bulletin No. 17, 1934, of the U. S. Office of Education contains a complete list of accredited secondary schools, arranged by states, with an indication of the agency (regional, state department of education, or state university) responsible for the accrediting. The accrediting standards of the various agencies are listed. Bulletin No. 16, 1934, is a similar treatment of accredited higher institutions.

Tercentenary Book.—The Department of Secondary School Principals of the N. E. A. has issued an official Tercentenary Book which is said to be the "spearhead" of their program to celebrate developments and progress in secondary education over the past three centuries. The topics included deal with: high school history, pupils, school plant and equipment, tools and techniques of teaching, and administration. Copies are obtainable at fifty cents each from C. O. Davis, 250 E. 43rd Street, New York City.

1935 Yearbook on Elementary Education.—The Fourteenth Yearbook of the Department of Elementary School Principals, *Socializing Experiences in Elementary School,* gives serious thought to informal activities which furnish pupils integrating and socializing experiences. The new curriculum has been deeply concerned with the selection of school exercises and activities that safeguard mental health, promote social adjustment, provide sequences of purposeful endeavor,

and challenge creative effort and self-expression. The elementary school principal stands in a strategic position to decide on innovations which may result in a program of activities which will reorient the old "extra curricular activities" and give them their proper places in a planned education.

The Yearbook discusses these activities under the headings of: socialization as a function of the elementary school, assemblies, plays and pageants, red letter days, music, elementary school clubs, pupil participation in school management, socializing experiences in physical education, the elementary school newspaper, the activity program and coöperative community activities.

Although the use of informal procedures is not new, there has been a meagerness of literature concerning the practices of elementary principals and teachers. This 1935 yearbook brings together a wealth of practical material on these points. It represents a concerted effort, by the Editorial Committee and many other contributors, to think through the problems involved and to discuss them between the covers of a single book.

In the future we shall hear more and more about the social aspect of education. This aspect should not be conceived as something apart from the academic side of school life, but must become the center of focus for everything that is done in school. The types of activities discussed in this book seem especially favorable to the wholesome social development of children. It is through these abundant opportunities that children grapple with real life situations providing for themselves problems which result in learning.

Two points especially should be kept in mind with reference to the material: (1) The major emphasis is placed upon the socialization of children rather than upon the mastery of subject matter; and (2) the yearbook does not attempt to cover the entire field of experiences which have socializing value; the topics are limited primarily to those types which have been considered traditionally "extracurricular."

Bess Clement of Clarksdale, Mississippi, was chairman of the Yearbook committee.

Child Development Monographs.—Recent numbers of the *Child Development Monographs*, edited by Lois H. Meek and published by Teachers College, Columbia University, are as follows:

Catherine W. Brackett, *Laughing and Crying of Preschool Children*, No. 14, 1934.

Mary S. Fisher, *Language Patterns of Preschool Children*, No. 15, 1934.

Elda Robb, *A Study of the Energy Requirement of Normal Three-and Four-year Old Children*, No. 16, 1934.

Mary S. Rose and others, *Child Nutrition on a Low-Priced Diet*, No. 17, 1935.

Frances V. Markey, *Imaginative Behavior of Preschool Children*, No. 18, 1935.

Dorothy Rood, *The Nurse and Parent Education*, No. 19, 1935.

A. T. Jersild and Frances B. Holmes, *Children's Fears*, No. 20, 1935.

Curriculum Journal.—The title of the *News Bulletin* of the Society for Curriculum Study has been changed to *Curriculum Journal*. It is published in mimeographed form about eight times per year with Henry Harap of Western Reserve University as editor. The society is a professional organization including: curriculum directors in county, city, and state school systems; other administrative and supervisory officers who are primarily interested in the curriculum; classroom teachers who are working on

special curriculum problems; research workers and authors of curriculum studies; college and university instructors; curriculum workers in non-school organizations; and others who are especially interested in the professional field.

Slater Fund.—The report of the John F. Slater Fund for the year ending June 30, 1934, indicates that the cause of Negro education was aided during the year to the extent of the following appropriations: aid to county training schools, $59,365; salaries of teachers in colleges and in private and secondary schools, $55,214; study of conditions in county training schools, $2,181; theology fellowships, $3,000; miscellaneous appropriations, $2,671; and administrative and general expenses, $19,804.

Institute for Advanced Study, Bulletin No. 4.—"The Institute for Advanced Study is located at Princeton, New Jersey. Work began in the field of mathematics October 2, 1933. The authorities of Princeton University have been most helpful and coöperative. They offered the Institute space in the new mathematics building, Fine Hall, opened in 1931. While the Institute and Princeton University are organically and administratively entirely distinct, the faculties and students of the two institutions coöperate in any direction that promises more favorable results than either institution could obtain alone, the students availing themselves of the courses, seminars, and opportunities for conference and direction of work in both institutions without payment of an additional fee. Advanced workers, such as National Research Council Fellows and Rockefeller Foundation Fellows, who have come to Princeton to study with a member of one group, have in many instances found it in their interest to confer with one or more members of the other group. The Foundations concerned therefore accredited their Fellows to both institutions.

"The initial group forming the School of Economics and Politics will assemble in Princeton in the autumn of 1935.

"During the past year the Institute has also made a tentative beginning looking forward ultimately to the establishment of a school devoted to humanistic studies. Two young scholars have been engaged in studying the resources of Princeton and of adjacent centers in preparation of further steps when the time is ripe."

The director of the Institute is Abraham Flexner.

Ella Victoria Dobbs Fellowship, Pi Lambda Theta.—On February 24, 1935, the Fellowship Committee met in Atlantic City to establish plans for the second year of this biennium.

Heretofore the policy has been to award the fellowship to a person of high qualifications regardless of her particular problem chosen for study, provided it were in the field of education. Some of the fellowship studies were on the elementary level, some on secondary or higher education. Some studies were in content, some on techniques. Because of the wide range, it has always been difficult to project a series of Pi Lambda Theta research publications in education, as has been frequently suggested.

In order to obviate some of these difficulties, after much discussion and consultation with competent research workers, the Fellowship Committee has recommended a long-range plan for the Fellowship as follows:

(1) That we define a broad field of educational research within which the fellowships for the next few years will be selected.

(2) That since Pi Lambda Theta is an organization of professional women a broad field of study appropriate to its interest is the professional training and opportunities for advancement of women in educational work.

(3) That in order to secure a map of needed research within that field the fellowship grant be made for the year 1935-36 to a person or a research committee to be in general charge of this study, the resulting reports to include (a) a bibliography of present materials in the field, and (b) a comprehensive outline of needed research, specific problems, and techniques.

(4) That out of the Fellowship fund for 1935-36 enough money be reserved to print and distribute the resulting publications, which will serve as a guide to Pi Lambda Theta's contribution to educational research over a period of years.

(5) That the work be gotten under way as promptly as possible and that the person or persons in charge of making this long range plan be asked to attend the Biennial Council and present plans for the study.

(6) That following 1935-36, the fellowship be granted each year to a person who meets the qualifications previously set up, and who will work on a problem within the defined field.

Initial steps have already been taken to carry out the committee's recommendation. Because of the particular nature of the work and the importance of having a preliminary report ready for Biennial Council in August, the Fellowship Committee has decided that a committee of competent research workers would be more productive for this particular problem than would an individual. A committee has therefore been selected, as follows:

Dr. Katherine Greene, University of Michigan.

Dr. Helen Walker, Teachers College, Columbia University.

Dr. Grace Coyle, Western Reserve University.

Dr. Helen Davis, engaged in research work in Pittsburgh.

While Dr. Greene and Dr. Walker will serve as consultants throughout the study, it is expected that Dr. Coyle and Dr. Davis will carry the major part of the study.

Studies of Higher Education.—W. C. Eells of Stanford University has been working on a series of five projects in the field of higher education.

1. One study is the result of a year's investigation of all published surveys of higher education made under the joint auspices of the Carnegie Foundation and of the U. S. Office of Education. It is based upon a study of 230 printed reports of such surveys made in the last 25 years. It includes a careful historical sketch of the development of surveys in higher education; an analysis of the published reports from a variety of standpoints, chronological, geographical, and initiatory; a study of the staff, the agency, and the institutions included; time required for survey, costs and sources of funds for making them; an analysis of the techniques used in gathering and presenting information; an analysis of the content of the reports; a selection of thirty outstanding survey reports by a group of experienced surveyors; a determination of the success of the surveys by three methods, one of which involved the investigation of the extent to which some 5,000 specific recommendations made in different surveys have actually been carried out in the institutions concerned; the setting up of standards for better surveys in the future; and a consideration of probable and desirable future trends in higher educational surveying based upon the

opinions of thirty of the men who have had the greatest experience in making such surveys.

Extensive appendices contain lists of all institutions surveyed, topical indices of all the published surveys, and a summary of each survey report published including such information as title, sponsoring body, agency, staff, comments and summary, institutions included, bibliography of related publications, availability in sixteen leading educational libraries, and a critical evaluation of the results of the survey by an outside authority.

The study, which perhaps may be termed a "survey of surveys," aims to present in systematic form the experience and judgment of the past, as interpreted by the author and by a group of experienced surveyors in the field of higher education, in a form to improve the theory and practice of higher educational surveying and the administration of higher education. It is expected that the study will be published during the spring months.

2. A second study analyzes the growth of the junior college movement, based upon a comparison of the data presented in the 1934 and 1935 published directories of the junior college. It considers total number and enrollment, public and privately controlled colleges, institutional changes, types of institution, size of colleges, enrollment by classes, number of instructors, changes in administrators, and types of organization. This report appeared in the *Junior College Journal* (February, 1934), and in condensed form in *School and Society*.

3. A third investigation is based upon an analysis of the data in the latest edition of Hurt's *College Blue Book*, in an effort to determine both norms and desirable standards of college endowments on a unit basis. Endowments are summarized and analyzed for almost four hundred privately controlled institutions on three bases: (1) endowment per student enrolled, (2) endowment per student capacity, and (3) endowment per faculty members. Necessary endowment to support a non-tax supported college on a *minimum* basis and on an efficient basis is considered. A summary of this study was published in *School and Society*.

4. Almost ten years ago Professor Eells computed the "center of population" for higher education in the United States for each census period since 1790. These results were published in *School and Society* (September 11, 1926). The recently published statistics of enrollment in higher educational institutions by the U. S. Office of Education for 1930 make it possible to continue this determination for the most recent census period. Such a study is being made, with supplementary investigation of the center of population for junior college enrollment, for the years over which data are available.

5. Five years ago, in connection with the *California Junior College Mental-Educational Survey*, over ten thousand junior college students in California were asked whether they expected to continue their education after junior college, and if so, where. Over seven thousand expressed such an intention and more than six thousand stated the institution which they expected to enter. A study is now being made of the extent to which these six thousand students actually entered the institution of their choice and the length of time they remained in it. While the bulk of the records to be checked are in California colleges and universities, students expressed intentions of going to institutions in most of the states of the Union and all of these are being checked as well.

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